

The Machine Tool Show— A Symbol and a Promise

by
Julian
Chase

LOOK at the Machine Tool Show. Look toward Cleveland at what its sponsors describe as the biggest industrial exhibition ever held. Consider critically the vast and varied array of modern production equipment and materials that have been devised and developed out of age-old experience, acquired expertness and cultivated ingenuity; that have grown from generations of individual effort backed by private capital; that stand today as the latest and best expressions of initiative and resourcefulness spurred by the profit motive. Look at this comprehensive display of the newest instruments of the machine age of capitalism and what do you see?

To some, the show may seem merely a collection of new machines; refined and improved products of specializing engineers, practical production men and profit seeking manufacturers. But that is only a small part of what it really is. It is much more than that. It is a milestone on the road of social-economic progress. It is a measure, indicative but inadequate, of the potentialities of a coming prosperity. It has in it the promise of better and cheaper products for all our people, of increased employment, less poverty and want, of a wider spreading of our national income, of lifted living standards. It symbolizes the American spirit. It typifies the American ideal. It points the way to human happiness with liberty and independence for the individual respected and preserved.

Unless these things are seen in it, the Machine Tool Show is considerably less than half seen.

Automotive Industries salutes the machine tool makers and their collaborators. We salute again, on this appropriate occasion the automotive industry with its makers of complete vehicles, parts, materials and accessories. We acclaim the contributions of this great group of manufacturers to the progress of the American people through the unprecedented utilization of machinery in the liberation of labor and the spreading of wealth. We take exceptional pleasure in bringing to the automotive industry this lasting record of the latest accomplishments of the makers of the tools and materials which, even more in the future than in the past, will aid it in furthering our national well being.

Buick Spends Millions Working Conditions, Cut



IN the past eighteen months Buick has spent \$14,500,000 in its various manufacturing divisions, chiefly in new equipment, new tooling, and new processes. Coming at this time, Buick's vast modernization program constitutes an important contribution to economic recovery in the United States. It represents, specifically, one of the biggest boosts to the machine tool business which received its recovery impetus from automotive activity.

This great program, in addition to capital investment, has created new employment, not only in Flint, but in many other parts of the country, certainly in the many localities where the new machinery has been produced. In addition it has served to stimulate raw materials suppliers and has had its effect upon employment in their plants.

It is a part of our policy to keep pace constantly with the improvements and developments in manufacturing equipment and production processes. The plant research and manufacturing divisions are constantly seeking improvements in existing set-ups and investigating developments on the outside. In view of this, there is a never ending activity even during times when large sums are not expended.

We believe that the modernization of manufacturing plant is one of the biggest tasks confronting every plant manager. It is only by constant improvement that the industry can offer the car buying public consistently better value, better performance and longer service life, at a constantly lower price.

When the public began to demand smoother, more quiet car operation, it became necessary to improve the existing methods of producing transmission gears, to develop better body insulation, to produce better balance of engine parts, and to maintain finer limits for all mating parts. To anticipate these requirements, Buick

for Modernization to Improve Costs and Swell Employment

by Harlow H. Curtice

President, Buick Motor Co.

has spent a good portion of its modernization fund to create one of the most advanced transmission production plants in this industry. Over a million dollars has been spent in the engine division on improved crankshaft production, realignment, of the entire division, and the installation of the latest type of piston manufacturing line to be found anywhere.

It is highly desirable to have the public in general acquire a better appreciation of the real benefits derived from the installation of modern methods and equipment. A modernization program such as the one completed at Buick is reflected immediately in better business for durable goods manufacturers, and producers of raw materials, and creates new employment for a great many workers in many fields. The purpose of cost-reducing equipment is manifold. It permits the manufacture of a vastly better product at lower cost and this reduction is passed on to the general public. It is perhaps little appreciated that higher wages for factory workers would be impossible without the aid of new equipment; and that the generally higher scale of wages throughout the industry is definitely a product of good management and modern methods.

Mechanization is not intended as a means of eliminating workers and thereby reducing direct labor costs. The real fact is that although the man-hours per unit are lowered by modern equipment, the lower production cost per unit makes it possible for more people to buy the product and thereby stimulates buying. As more and more volume is demanded, more and more labor is employed.

It is a matter of fact, too, that lower costs are the result of better processes and not the product of cutting direct labor. Better ways of doing the job, elimination of waste, improvement in materials handling, and other management devices are

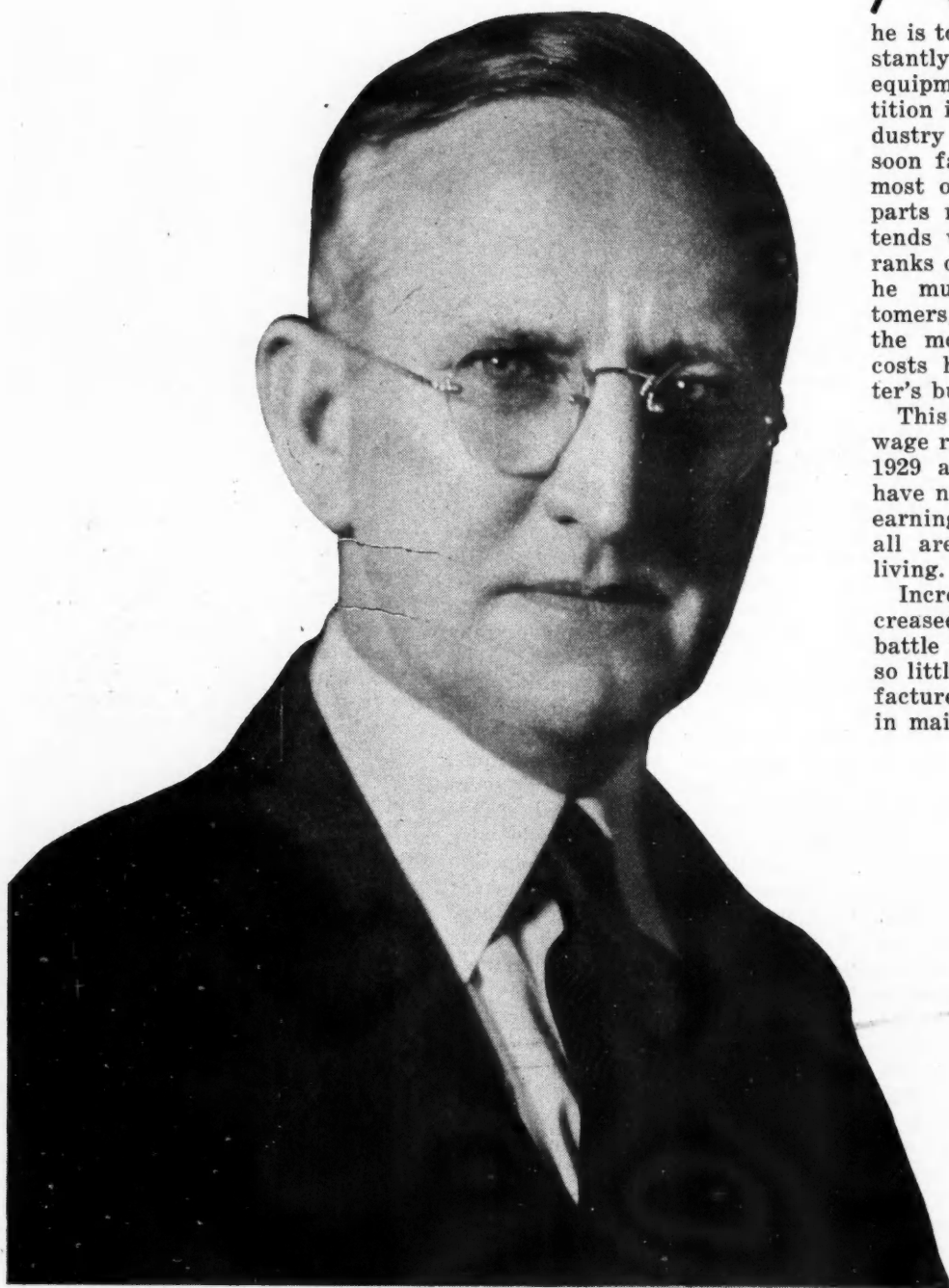
the things that actually produce lower costs. Not the least of the factors contributing to better costs, is the reduction in overhead due to the use of modern, flexible manufacturing equipment that has long life and permits a changeover from one part to another without scrapping the machine. Such equipment may easily cut the depreciation burden in half on many operations.

Much of the management effort at Buick has been directed toward the improvement of working conditions, elimination of fatigue, and more worker comfort in general. This objective has had much to do with the selection of new production equipment. Consider the foundry for example. Here is one place where it seemed that most of the heavy work had to be done by the man. Yet the new foundry, as described in *Automotive Industries* recently, features production equipment that has removed most of the back-breaking labor usually associated with foundry work. Improvement in materials handling, better ventilation, more comfortable working conditions, along with other features, have made the foundry an outstanding example of what can be done to improve the lot of the foundry worker.

The same principle has been carried out in other manufacturing divisions. In the engine plant, for example, most of the equipment installed on the cylinder block line incorporates hydraulic fixtures which lift the work into place, and then lower it into a position where the operator can slide the work right on to the table. Heretofore it was necessary to move the heavy blocks around and lift them by means of hoists.

By eliminating manual operations, and by improving the handling of work from machine to machine, Buick has made a great stride toward bettering working conditions and eliminating fatigue. These things in turn tend to reduce accidents and minimize the usual industrial hazards. In addition, the operators are more alert and can be depended upon to turn out work without danger of spoilage, thereby reducing rejections and cutting down inspection costs. These factors, although they may appear somewhat intangible, actually have a lot to do with building a better product at lower cost without actually taking the savings out of direct labor.

Parts Makers



ANY parts manufacturer, if he is to stay in business, must constantly modernize his plant and equipment. So keen is the competition in this field of the motor industry that if he fails to do so he soon falls by the wayside. Unlike most other kinds of business, the parts manufacturer not only contends with competition within the ranks of his own industry, but also he must compete with his customers, for if he is unable to meet the motor vehicle manufacturer's costs he cannot hope for the latter's business nor long survive.

This industry is paying hourly wage rates in excess of the peak of 1929 and certainly manufacturers have no regrets that their men are earning high wages, realizing that all are facing increased costs of living.

Increased labor costs mean increased cost of product, and the battle today is to give so much for so little money that the wise manufacturer realizes that his salvation in maintaining his competitive po-

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Automotive Industries

Must Modernize to Keep Pace

by C. C. Carlton

President,
Automotive Parts &
Equipment Manufacturers, Inc.

Secretary,
Motor Wheel Corp.

sition is to reduce his cost of production and improve his product at the same time by modernization and by new equipment.

I have been delighted to find that during the depression the well-financed companies have devoted much study and large sums of money for exactly this purpose. The parts and equipment manufacturing industry today is in better position to meet the wishes of customers on volume production and to produce the same at a lower price and with better quality than ever before.

It is safe to say that many of the leading parts companies of the country have used 1933 and 1934 completely to revamp and modernize their plants, and that these companies have gone as far in this direction as have the motor vehicle producers.

Take my own company, for example. The Motor Wheel Corporation has spent approximately \$750,000 since January 1, 1934, on new equipment and on modernization of other equipment to decrease production costs—and we recently have committed ourselves to another program of about \$200,000 on new equipment which will arrive before we start on 1936 production.

At the close of 1934, Automotive Parts and Equipment Manufacturers, Inc., sent a query to the larger manufacturers asking them if they were willing to give in approximate figures what they had spent in 1934 and how much they expected to spend in 1935 on modernization of buildings and equipment, and on

new. Forty-seven of the leading original equipment companies, who are members of this group and who account for 40 per cent of the aggregate payroll of the 839 members, reported that they had spent some \$10,000,000 in 1934 on modernization of their plants.

The use of single purpose machines, despite much comment to the contrary, is still a factor in the parts industry. As a matter of fact, a great deal of special equipment is being used by the larger producers on volume business, which accounts in large part for the fact that automotive parts today are lower priced than they ever have been, despite the higher labor and material costs that now prevail.

It may be of interest to point out that seven states account for 95 per cent of the payroll of the A.P.E.M. members. These states in order of their importance in the parts industry are: Michigan, Ohio, Illinois, New York, Indiana, Pennsyl-

vania and Wisconsin. Approximately 63 per cent of the plants are located in this area, and they employ about 95 per cent of the workers and do 93 per cent of all the business, based on a recent tabulation.

The parts maker today lives by his wits. He must have an alert engineering staff constantly at work on new developments to present to the motor vehicles producers, and must maintain an efficient manufacturing organization to compete in costs and quality with the best that a fast-moving industry can produce. Only with the most advanced equipment can he hold his own or hope to forge ahead in this swift race.

Broader Adaptability

by C. J. Stilwell

Vice President,
The Warner & Swasey Co.

President,
National Machine Tool
Builders Association

TODAY, more than ever before, manufacturers are faced with problems of plant rehabilitation and equipment replacement. This is particularly true with respect to machine tools.

Throughout the depression machine tool purchases were at a minimum, while existing equipment continued to depreciate or become obsolete.

Now, with business on the up-grade and the prospect of still further increases in volume in the future, production problems have become acute, and in hundreds of instances immediate decisions must

be made as to whether to attempt to continue to operate old machine tools or to replace them with new and more efficient models.

No proper answer to such a problem can be obtained, of course, until a manufacturer makes himself thoroughly familiar with the very latest design in machine tools and with their cost-reducing and production-increasing capacity.

For this reason the National Machine Tool Show, which will open in Cleveland next Wednesday, September 11th, and continues through the 21st, will be one of extraordinary significance.

This show will be the largest industrial exposition ever held in the United States. It will occupy 250,000 square feet in the enormous Cleveland Public Auditorium. Nine hundred machines will be in operation in the underground Exposition Hall of the Public Auditorium. These machines and the other exhibits on the main floor and in the

annex will, it is estimated, have a cost value of approximately \$4,000,000. There will be 238 working exhibitors and 500 technical experts on the job, with 1000 assistants.

On the whole, I would say that increased adaptability may be perhaps the most outstanding feature of the new models which will be shown at this year's Machine Tool Show. In these days of keen competition, rapid technological advancement and swift change of design to meet shifting public tastes, broad adaptability is absolutely essential and lends added assurance of the recovery of the investment in machine tools through reduction in operating costs in the shortest possible period of time.

During the depression, while sales of machine tools were at a low ebb, machine tool builders and engineers concentrated upon improvements in construction and design which have effected the adaptability demanded by today's manufacturing requirements. Thus the new models to be exhibited at the show will possess higher speeds, greater range and higher degree of accuracy, longer life, more power.

Other notable improvements will be apparent with respect to precision of manufacture of machine tools. Typical, for instance, is the increased accuracy in gears resulting in more efficient, smoother and quieter transmission of power.

Another reason for attending the Machine Tool Show is that there the manufacturer may have an excellent opportunity of enlisting the services of the machine tool builder with respect to production problems involving the use of machine tools. It is my opinion that machine tool users should expect from machine tool builders more than the mere supplying of the machines

Feature of New Machine Tools

themselves. Machine tool users have a right to demand increasingly from machine tool builders more advanced, more accurate and more efficient engineering service which will be of assistance in determining the right kind of machine tool equipment to buy for the problem at hand, and the best method of setting up and utilizing such equipment.

I believe that a manufacturer is justified in feeling that his particular machine tool problem is a special situation, requiring special study for its correct solution. Machine tool builders today are better equipped than ever before to make such special studies. Because of their familiarity with varying circumstances in many plants, they are able to pass on to the manufacturer the benefit of sound judgment based upon a broad range of practical experience.

Such services will be made available to visitors by the exhibitors at the Machine Tool Show. The show, therefore, will provide to the manufacturer not only an opportunity to examine new models of machine tools, but also to get expert advice as to the type of installation which will best solve a specific manufacturing problem.



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100 Million Automotive Dollars

By H. E. Gronseth

Detroit News Editor

Automotive Industries

LAUNCHED on an expansion and rehabilitation program involving more than \$100,000,000, the motor industry is giving convincing evidence of its faith in the near-term business outlook. No such outlay would have been made at this time had not its leaders, whose fingers constantly are on the public pulse, sensed a bigger year for the industry in 1936. Preparations are under way on a wide front for a materially enlarged production and along with this more economical operations.

All year the industry has been stretching out. In rapid succession and from all quarters come announcements of additions to plant, acquisition of property, construction of new buildings, reopening of idle factories, rehabilitation, modernization and all the activities that go with a program of preparation for a quickened tempo of business.

The motor vehicle manufacturers themselves will spend nearly 100 million this year in improving and expanding their production facilities. To this can be added several more millions being spent by the industry's suppliers.

Outstanding is the recently announced program of General Mo-

tors involving fifty million dollars, of which a limited amount is for new construction and the major part for machinery and other plant equipment directly involved in production. The figure covers the full year 1935, which means that the corporation already is well along with its program, details of which have appeared in earlier issues of *Automotive Industries*.

Among the highlights are the \$14,500,000 expenditure for expansion and rehabilitation of Buick; a \$3,500,000 expenditure at Pontiac approximately doubling capacity to near 400,000 units annually; a substantial investment in Lansing for acquisition of the former Durant plant and the revamping of Oldsmobile facilities to double capacity of that division to 300,000 cars a year; several millions for Chevrolet expansion, which includes its new assembly plant at Baltimore, expansion of its plants in Detroit, Saginaw and Bay City; a \$5,000,000 tool program for 1936; \$3,500,000 for expansion and improvement of various Fisher Body plants; a new plant for the Allison division at Indianapolis, where liquid cooled aircraft engines are to be made; a diesel electric locomotive plant in Chicago; additional investments at Harrison Radiator plant in Lockport, N. Y., and purchase of the Murray plant at Memphis.

More recently the Delco-Remy division of General Motors announced plans for establishment of a manufacturing plant in Bloomfield, N. J., and expansion of its Muncie plant for battery manufacture. The corporation also recently announced establishment of a warehouse in Des Moines to serve Chevrolet, Buick, Olds and Pontiac dealers in Iowa. One of the new buildings erected by Chevrolet in the current expansion of its Detroit plants, now nearing completion, will be devoted entirely to heavy machinery used in making metal stampings. Additions to its plants at Saginaw will be used for manufacture of bumpers, forgings and other parts.

No small part of the General Motors program represents a decentralization of manufacturing operations, the elimination of bottle necks and the provision for more than one source on important parts.

Next in magnitude is the huge expansion and rehabilitation program of Ford Motor Company involving over \$32,000,000. Work in progress or nearing completion includes the construction of a new hot strip steel rolling mill, a new cold sheet steel finishing mill, modernization of the power plant into the largest high-pressure steam power plant in the world, installation of new furnaces and other equipment in the foundry for casting of alloy steel parts, modernization of one of the blast furnaces and installation of equipment and other facilities throughout the plant. Four million dollars is being spent for construction of two batteries of by-products coke ovens,

for Capital Goods in 1935

and \$5,000,000 for a mill to manufacture molded automobile parts from soy bean plastics. The \$10,000,000 strip steel rolling mills and sheet steel cold finishing mills will be ready for operation in September. Among the more recent Ford projects is the new valve factory being built at Northville, Mich., to replace one now in operation, and substantial expenditures in air conditioning of several departments of the Rouge plant.

Ford Motor Company of Canada will spend an estimated \$2,000,000 in a power plant modernization program which will double the existing plant's capacity. This is the second major capital investment by this company in recent months. This spring a new electric furnace foundry costing nearly a half million dollars went into production of cast steel crankshafts. Company also is spending \$1,000,000 in expansion of its Australian plants.

The expansion program of Chrysler Corp. runs into many millions. Directors at a recent meeting appropriated \$7,000,000 covering expenditures then in sight for plant expansion, replacement of tools and new equipment in connection with new model production. The amount was not intended to cover the balance of the year, nor did it include expenditures during the first half of 1935 from appropriations previously made. For example, the \$1,500,000 expenditure for a Plymouth assembly plant in Evansville was not included, nor was the \$400,000 spent for a Dodge truck division, completed this summer. A \$350,000 addition to the Chrysler Canadian plant has just been announced.

Four additions are being made to the Plymouth plant in Detroit, adding 103,900 square feet of floor space and bringing this division's total to nearly 1,000,000 square feet. Provision for further expansion has just been made by the purchase by Chrysler of the Wills-Ste, Clair plant at Marysville, Mich.

Among the so-called independents is an expenditure of \$1,500,000 by one company for replacing obsolete equipment and tooling for new models. A part of Packard's \$6,000,000 program in preparation for its 120 car fell in the current year and further expansion is going on. Lesser amounts are being spent by others in preparation for 1936. Studebaker is to build a final assembly plant in Los Angeles to serve the west coast and export trade from those ports, and is spending \$300,000 for plant equipment and betterments this year.

Obviously with so big an expansion and modernization program under way by the car makers, it is to be expected that the industry supplying them also is keeping step. While expenditures by individual parts makers are naturally not so large as those of the bigger motor vehicle producers, they make a sizable total that adds many more millions to the industry's outlay in preparation for anticipated greater volume of business in the near future.

Nearly a million dollars is being spent this year by Motor Wheel Corp. on new equipment to lower production costs and in preparation for 1936 business. Kelsey Hayes Wheel Corp. is investing \$800,000 in a new steel foundry for producing cast hubs and drums. In addition to expanding facilities of its Detroit plants, Briggs Mfg. Co.

has leased and is equipping the former Graham truck plant at Evansville, where bodies will be built for the Plymouth branch which opens there this fall.

Borg-Warner Corp. thus far this year has spent \$470,000 on machinery and equipment and \$50,000 on buildings. Additions are being built to the Wilcox-Rich Saginaw plant of Eaton Mfg. Co. and to the Eaton Spring plant in Detroit, while its Jackson bumper plant is increasing production facilities by installation of new equipment. Zenith Carburetor is constructing a \$45,000 addition to its plant. Reynolds Spring Co. is reopening its Detroit plant, idle since early in 1932. Macklin Co., Jackson, Mich., is increasing capacity by 50 per cent. Electric Auto Lite has acquired two plants and is entering new fields.

These are only some of the recently announced expansion and modernization moves in the parts and accessory field, but they serve to show how extensive and widespread are the preparations that are being made to meet the enlarged demand that this division of the industry will be called upon to meet when motor vehicle manufacturers shift into high gear for 1936 production.

An Experiment in

Excerpts

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* * *

" . . . the companies' records of service which the Board used in passing on claims of seniority showed that it had long been the custom in the industry to observe seniority in both lay-off and rehiring."

* * *

"It is perhaps an interesting commentary on the neutrality of the management in these polls (for the election of bargaining agency representatives) that the company unions, generally regarded as the creature of the employers, polled in 63 plants in the industry only 13 per cent of the whole vote recorded in the nominating elections."

* * *

" . . . the most noteworthy change in labor relations in the automobile manufacturing industry is the degree to which collective bargaining has become the accepted method of negotiation. In the next years, the probabilities are strong that the advances so far made in this direction will persist and will be strengthened. And this is likely to be so not because collective bargaining is required by law, but because the benefits and merits of this year's experience have commended themselves to both men and management."

THE experiment in labor relations under the President's Settlement and the Automobile Labor Board was carried on amid contentious surroundings marked by play for position by competing elements, debate over doctrine, and discussion of events in places more or less remote from the scene of action. In the circumstances the actual forces which in many places have been reforming the relations of employers and employees have probably been obscured.

In the past year a large number of issues have been composed in the automobile manufacturing industry. Their cumulative significance can easily be underestimated. Any sober judgment of the progress made in settling the multifarious problems of labor relations in this industry must rest on at least some familiarity with the nature of specific issues, the manner of their handling, and the results of their disposition. There comes a time in the consideration of any practical and administrative problem when generalities regarding it are too irrelevant to matter.

On questions such as discharge, discrimination and seniority, the year's experience after April 1, 1934, pretty well disclosed what needed to be done and what was done. Concerning the larger questions of representation and collective bargaining, where imponderables play an important role and habitual conduct may take longer to change, definitive appraisal of the policies in effect since the announcement of the President's Settlement will be made some years hence.

Claims of discrimination because of union membership and activity have loomed large in the proceedings of practically all of the labor boards created by the Federal government since June 16, 1933. A nation-wide movement for

Automotive Labor Relations

A dispassionate discussion of the operations of the Automobile Labor Board by its chairman

Dr. Leo Wolman

expanding union membership, undertaken in a dynamic industry always characterized by high rates of hiring and discharge, was bound to arouse suspicions of unfair practice, to produce a state of nervousness and irritability, and to confuse the minds of most of those involved in this situation as to their rights and duties. Propaganda in a righteous, as in an evil cause is notoriously hard to control and often drives its perpetrators to extremes which they later regret. Accordingly, in an atmosphere of conflict and threat, some zealous foremen took the bit in their mouths and arbitrarily got rid of working men they disliked, some employees were badly advised by their leaders and exceeded the bounds of discretion, with the result that the issue of discrimination became the most potent battlecry of the unions and the knottiest problem of the newly created boards of arbitration and conciliation. In view of the extent of the industrial zone over which this contest was waged, it was to be expected that the attempt to overwhelm American factory employees by a tidal wave of organization would end in disaster for many of them.

By the end of March, 1934, when the Automobile Labor Board was appointed, charges that discrimination in hiring and firing was generally practiced in the automobile industry were being widely made. This claim was the occasion for a day's hearing before the National Labor Board in Washington in February, 1934. By the time the Automobile Labor Board was on the job, it was generally asserted that men were discharged, laid-off ahead of time and rehired late or not at all solely because of their membership and activity in a union. Investigation of such cases became, then, one of the most important activities of the Board and afforded its



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members an opportunity over more than a year to determine how extensive and serious a problem the practice of discrimination was in the automobile industry and how amenable the whole procedure of hiring and firing was to control and reform.

It is now abundantly clear from the record that discrimination had not been a major difficulty in this industry. That employees had been discharged in the fall of 1933 and in the spring of 1934 because of organizing activity was from time to time true and was so determined in findings of the Board. But their number was at no time large and was greatly reduced with the advent of the Board and the exercise by it of its jurisdiction over claims of discharge and discrimination. In fact, when the earliest and largest batches of discrimination claims became the subject of conference between the Board and the employers, arrangements for the return to work of most of the claimants were made quickly and harmoniously.

Discrimination Not a Factor

Although the Board considered, during its whole term of office, close to 2400 cases, it is doubtful whether as many as 500 of these fell into the category of discrimination claims. And of this number many could not have stood the test of disinterested inquiry. Most of them were the cases of employees who simply turned to the Board as a government agency which might help them to get their old jobs back or to be employed in new ones. Considering that the industry under the Board's jurisdiction had on its payrolls about 200,000 employees, its traditional attitude toward trade unionism, the temper of the organizing campaigns, and the stakes played for, the number of cases of alleged discrimination brought before the Board was surprisingly slight.

In many American industries which have been involved in disputes over the application of section 7(a) of the National Industrial Recovery Act, the most difficult cases of alleged discrimination were those of employees who had participated in strikes and to whom employers had later refused re-employment. It requires only a cursory reading of recent accounts of mediation and arbitration proceedings to see how large a proportion of the claims to jobs are of this nature.

Altogether the Automobile Labor

Board used its good offices in the settlement of 11 strikes, affecting some 30,000 employees in the automobile manufacturing industry. The terms of settlement in each of these strikes provided that all strikers should retain their seniority rights and should be returned to employment in the order of their seniority as soon as there was work for them to do. While the application of these terms temporarily encountered difficulties in two plants where neither party had yet learned the benefits of cooperation in the conduct of industrial relations, the retention by the strikers of seniority was everywhere the rule, and, as a result, this source of discrimination claims, so troublesome elsewhere, was in this industry not an important factor.

More important still than the disposition of specific complaints and cases were the steps taken by the industry after the announcement of the President's Settlement to deal with the functions of hiring and firing. In most industries, and particularly in new and rapidly expanding ones, many of the operations of management are the product of accident and tradition. The rise of new conditions and experience with them must of necessity lead to scrutiny of the value of prevailing methods and to revision of policy and of principles of administration. In the field of labor relations in the automobile industry, this process is illustrated in the changes which have in the past year taken place in the jobs of foremen and similar supervisory officials.

In general, their acts have become much more subject to appeal and review. Authority over discharge has tended to become centralized in the higher plant officials and over hiring, lay-off and rehiring in the plant's employment office under the direction of a trained employment manager. However competent the common run of foremen may be, and most of them are men of ability and character, this transfer of authority is calculated to reduce the chances of personal favoritism in the distribution of jobs, to limit the possibilities of injustice to individual working men, to cause decisions as to employment to rest upon written records of service, and to fix the reasons and responsibility for a course of action affecting the employment of one or more employees.

The administration of the Board's seniority rules in the in-

dustry exemplified the significance of these transfers of function and authority. It is true, of course, that the principles of seniority had been substantially applied by the companies long before the Board issued its rules of lay-off and rehiring on May 18, 1934. In fact, the companies' records of service which the Board used in passing on claims of seniority showed that it had long been the custom in the industry to observe seniority in both lay-off and rehiring. For this reason the great majority of employees appearing before the Board could point, in support of their claims, to their terms of service as recorded on the companies' employment cards. But, while observance of seniority was in general the custom of the industry, in the absence of rules defining seniority rights and classifying employees in respect of them, deviation from the prevailing practice was in individual cases possible. The Board's rules strictly limited this area of uncertainty. And in the administration of the rules the employment office and not the foreman became responsible for preparing seniority schedules and for determining the order of lay-off and rehiring. Barring the very first seasonal lay-off in the summer of 1934, when the rules were new and when the delay in some plants in the preparation of the employment records resulted in errors in their application, the rules have been since administered with remarkably few complaints and with little evidence of their violation.

Remarkably Few Complaints

With respect to the review of discharges and of discrimination and seniority claims, the practice of the Board was to negotiate settlements with the employers and, where this was impossible, to investigate the case, hold hearings, and render decisions. Many of the issues in these types of cases settle themselves in the process of investigation and hearing or by appeal to the pertinent records. But there always are, in this kind of situation, a fair proportion of cases which are hard to decide not only because it is difficult to get at the truth but more particularly because so often the consequences of a decision may be quite far-reaching. It is in the circumstances the duty of a government board to protect the essential interests of those affected by its findings.

(Turn to page 343, please)

JUST AMONG OURSELVES

Machine Tools on Parade

NEXT week in Cleveland the machine tool industry will open the greatest display of labor saving, cost reducing and quality improving equipment ever staged in this country. There automotive general and production executives can see in a compact exhibition the latest creations of the machinery manufacturers. And there is no doubt that they will be there in large numbers for in no other industry is there such a widespread appreciation of the necessity for using the most modern equipment. In fact, it is to a large extent due to the fact that the automotive industry has been a leader in modernization that it is also a leader in national recovery.

* * *

See British Demand for More Power in Cars

ACCORDING to our British contemporary, *The Automobile Engineer*, fresh standards of speed and acceleration are at present under development in the British automobile industry, largely under the influence of multi-cylinder power units of "Transatlantic" origin, and the probability is that new standards altogether will be demanded in vehicles outside the small-car class.

During the greater part of the past decade (the "twenties"), nearly all the different American

makes of passenger cars were represented on the British market. When Great Britain adopted an import duty of 30 per cent and later on went off the gold standard, with the result that its currency dropped to about 40 per cent below par, the "sledding" became very difficult for the importers, and these cars disappeared from the market one by one. The situation probably was still further aggravated by the general business depression, which prompted more and more people to buy small, economical cars.

That British motorists had a liking for the American car with its roomy body, its smoothness and snap, there can be no doubt, and now that economic conditions are improving materially in the British Isles, the American passenger car is again becoming an important factor there. Notices to the effect that this or that American make was now being offered on the British market again have appeared in the trade press repeatedly of late.

About two years ago, on the occasion of one of the annual shows abroad, the observation was made that foreign manufacturers were returning to the four-cylinder engine, after several years' excursion into the multi-cylinder field. This retrograde movement was evidently started upon under the compulsion of economic stress. As far as England is concerned, the depression period seems to be over, and a larger proportion of buyers are calling for performance approaching that of American cars. The view is expressed in the pub-

lication referred to that makers of cars in the "over £300" class at least should prepare to meet this new demand, which could be done with a V-8 engine of about 150 cu. in. displacement without resorting to extremes in weight reduction.—P. M. H.

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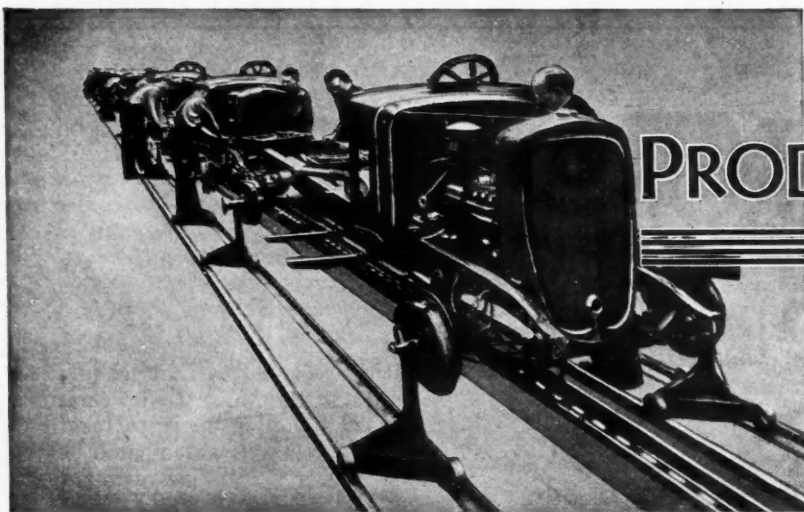
The NADA Attack on FOB Price Advertising

THE NADA's recent attack on advertised list prices struck what has always seemed to us to be one of the weakest spots in the industry's merchandising armor. The present practice of advertising the factory price less bumpers, spare tire, handling and, in some cases, advertising is misleading and productive of controversy and irritation.

While we are not sold on the practicability of advertised delivered prices, although the NADA advocates them, we do feel that there is middle-ground which would represent a real improvement. The only real variable in the delivered price of the automobile is freight. Generally speaking, every automobile sold has bumpers and spare tires, and it has to be handled and advertised. All of these items should be in the list price. If this were the practice, all the prospective buyer would have to add to the advertised price would be the freight and buyers would soon get to know what that amounted to approximately for their communities.

To effect this policy, it would be necessary only for the manufacturers to agree that these items were to be included in list prices. This would take some negotiating, but the proposition seems so rational that it should be possible to secure agreement.

—D. B.



PRODUCTION LINES

Bearings and Such

A lot has been learned of late concerning the compatibility of engine bearings and lubes. We are told that only a narrow margin of about 25 deg. in crankcase temperature marks the difference between success and failure. One organization, undoubtedly will find it possible to continue with babbitt bearings for 1936 because of reasonable crankcase temperature and low bearing pressures.

Inserted Copper

We mentioned some time ago that a prominent foundry had developed an iron cylinder head with copper inserts at the hot spots. According to a research group which has done some work with this head, it really holds remarkable possibilities. It has been souped up to a compression ratio of 7 to 1 without objectionable roughness.

Copper-Lead

AC Spark Plug has an outstanding set-up for the production of copper-lead con rod bearings. The most interesting feature, of course, is the unit for casting and normalizing the bearing alloy. They are getting set to go places this coming year.

New Economies

A new five-speed truck transmission was used to demonstrate some striking economies on a five ton truck of 20,000 lb. gross. Here are the facts:

Rear axle ratio—

8.64, speed 29 mph., 5.77 mpg.

5.88, speed 37 mph., 6.5 mpg.

4.68, speed 48 mph., 7.5 mpg.

3.96, speed 56 mph., 8.65 mpg.

In each case, engine governed speed remained the same. But the figures are most interesting since they show that best fuel economy comes from using a good engine within its best operating range, which is an obvious fact to the technical man.

New Deal

J. F. Lincoln has just contributed his bit to an analysis of our present economic plight. His ideas, and they are right to the point, are contained in a privately printed booklet running some 20 pages. No matter what you think of things as they are you may be interested in an interchange of ideas. If you are, you should get a copy of "Tell the truth and Keep out of the Way." Its contents are as provocative as the title. Selah!

Resists All

Crucible Steel has just issued a mighty complete loose leaf handbook on the properties of its family of Rezial stainless steels and stainless irons. Here is a group of material which by careful selection can be used to resist the attack of corrosive liquids and gases as well as heat effects. In addition to the chemical and physical properties of these materials, the handbook gives complete details for fabrication. We'll get it if you want it.

Provokes Thought

We had a session the other day with one of the pioneers of the transmission industry. They have been specializing in the truck field but have developed a slant on passenger car stuff that is an eye-opener, to

say the least. By proper balance of axle and transmission ratios, using a four-speed unit, they find an improvement in fuel economy upwards of 25 per cent without changing the engine, carburetion or anything else. Here is a compact transmission, very quiet, with high mechanical efficiency, and permitting rapid shifts from speed to speed with the use of the clutch—also without the aid of clutches or free-wheeling devices. Too much to it to permit much discussion here but we'll be glad to put you in touch with the people who are doing it.

Motion Study

AC Spark Plug plant, as it is today, is a shining example of motion study handled in a practical manner. Every one of the new assembly lines was studied intensively for subdivision of tasks and for balance before the equipment was turned over to the operators. The plant is replete with examples of balanced or rhythmic assembly stations, in which the operator is trained to use both hands simultaneously. For this type of work, the technique of skilled operators is studied by means of the motion picture camera, slowing down the projected film to permit close analysis.

More Broaches

We hear that another car builder is installing a line of surface broaching equipment for automatic finishing of the connecting rod big end and cap. They are going a step further by finishing the faces of the big end in the same set-up.

—J. G.

MANUFACTURING
MANAGEMENT
METALLURGY

New—— Production Equipment for Automotive Manufacturers



The Public Auditorium, Cleveland—Scene of the National Machine Tool Show To Be Held Sept. 11-21.

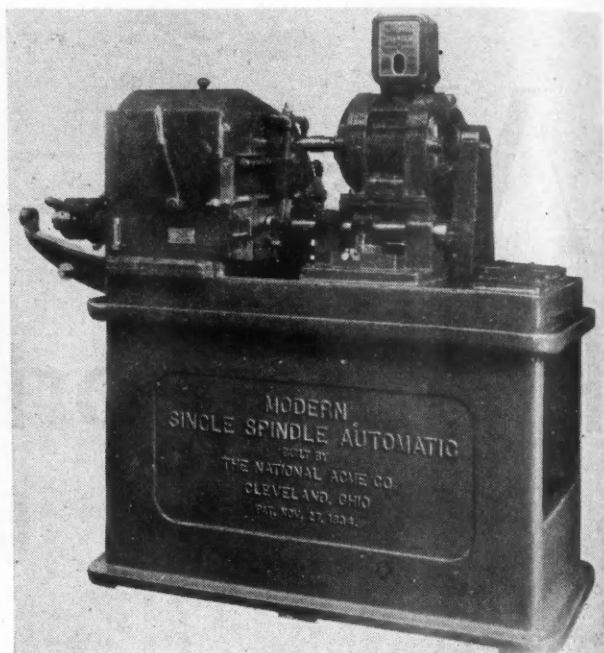
Single Point Boring Machine Speeds Production

To eliminate the reaming and rough honing operations, in the finishing of cylinder blocks, the W. F. & John Barnes Company of Rockford, Ill., has introduced a single point boring machine, claimed to produce straight, round holes that only require a few strokes of the hone to finish.

To put the machine in operation the control lever is moved to the loading position and two cylinder blocks are drawn into the fixture from the loading station by a hydraulically operated pull bar. When the control handle is moved to the starting position, locating pins engage dowel holes in the bottom of the blocks, clamping cylinders in the top of the fixture lock each block in place and the machine starts through its automatic cycle. The slides carrying four boring units each, driven by "V" belts and individual motors, move in rapid traverse until the boring spindles reach the boring position. At the completion of the boring operation the spindles are automatically stopped with all boring tools in the same relative position, and the fixture is shifted .016 in. so that there is no danger of marring the finished surface of the cylinder bores as the spindles are withdrawn.

Due to the close center distance of the cylinder bores, the boring units are so arranged as to bore alternate holes in both blocks at each operation. After the completion of the first four holes the fixture is automatically, hydraulically indexed the necessary distance between holes in the block for boring the next four holes. When the second operation is finished the control handle is moved to the unloading position, the locating pins are withdrawn, the clamps are released and the hydraulic pull bar removes the two finished blocks and pulls in two more, and the machine is ready for another cycle.

National Acme Co. shows single spindle automatic



The Barnes Company is also exhibiting at the show several hydraulic feed units designed for machine tool actuation and as used in the boring machine described. With these units a constant ratio between the feed-rate and revolutions-per-minute of the cutting tool is said to be maintained under all operating conditions, including heavy interrupted cuts.

Single Spindle Automatic Cuts Costs

Designed especially to handle work that requires only forming, drilling and cut-off, or similarly simple operations, the single spindle automatic screw machine is the latest offering of The National Acme Company, Cleveland, Ohio.

Provision is made for handling bar stock in twenty foot lengths, which is fed into the spindle by tension continuously exerted by a cable and spring operated drum mounted in the base of the machine. The chucking mechanism is operated by a cam drum on the headstock of the machine, operating through the usual chucking spool and collet.

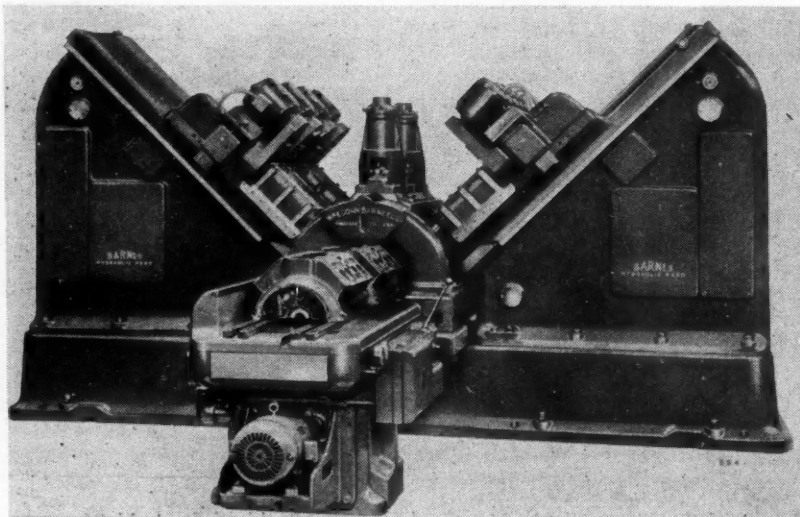
Two cross-slides are mounted rigidly on the face of the casting which encloses the gears. One of these slides carries the chamfering or forming tool, the other the cut-off tool. Taper gibs are provided for quick adjustment in case of wear. Each slide is independently operated by a hardened steel disc cam, a heavy spring opposing the forward motion of the slide in order to keep the roller firmly engaged with the cam to give accurate depth of cut.

The spindle and gears are mounted on anti-friction bearings and run in oil.

P & J Line Increased

In addition to the model 5-D-2 two-spindle automatic, recently reviewed in *Automotive Industries*, the Potter & Johnson Machine Company, Pawtucket, R. I., has added a No. 7-D automatic chucking and turning machine to its line of manufacturing automatics. The machine is provided with 20 speeds, between 11 and 248 revolutions per minute, arranged in five sets of four automatic changes. The feed is arranged in three groups, coarse, medium and fine, any one of which may be thrown in automatically by means of the feed dog or manually by the feed lever.

A new feature of this machine is the cross-slide construction. The cam drum is located directly under the cross-slide and the ball bearing cam roll studs are mounted in such a way as to furnish a direct connection. Drive to the cam



Barnes single point boring machine

drum is through worm gearing, and the entire cross-slide mechanism is fully inclosed and operated in an oil bath.

The turret slide is provided with hardened and ground steel inserts to form its bearing on the base ways, which are also of hardened ground steel. Five turret faces are provided for the mounting of tools.

New Features on American Radial Drill

Equipped with a 5 hp. built-in motor, the new American "Hole-Wizard" radial drill is provided with 18 spindle speeds ranging from 35 to 1500 r.p.m. By the use of pick-off gears this range may be increased to 3000 r.p.m. An outstanding feature is said to be the spindle reverse for tapping, secured by means of an almost instantaneously reversing motor, it being possible to change from full forward to full reverse in approximately $1\frac{1}{2}$ seconds.

The spindle of this machine, manufactured by The American Tool Works, Cincinnati, Ohio, is made of nitralloy for extreme surface hardness, thereby reducing wear and the possibility of seizing. It is ground its entire length and assembled with a close fit in a nitralloy sleeve, mounted on roller bearings. Spindle drive is through helical gears at the bottom of the head.

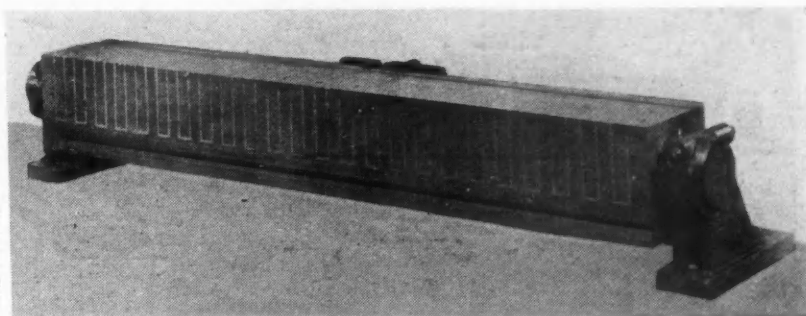
Six rates of geared power feed are provided, ranging from .004 to .025 inch per revolution of the spindle. All feeds are direct reading, the position of the dial indicating the feed in use.

Another new product of this com-

pany is the American multi-production lathe, developed to fill the gap between the standard engine lathe and the specialized, single purpose automatic lathe.

Owing to the high work velocities permitted by the use of cemented carbide cutting tools, for which this machine was especially designed, a live tailstock center mounted on roller bearings has been incorporated. To protect the operator against the danger of flying chips when turning at high speed, a chip breaker and controller is provided which breaks the chips into small sections and directs them into the chip pan.

To facilitate the setting of cross feed stops and to provide a means of quickly determining the diameter of the work when the cross stops are not in use, dual, direct reading cross feed dials are provided, which are geared to the cross feed screw so as to read directly in terms of work diameter. One dial is graduated in fractions and the other in thousandths of an inch.

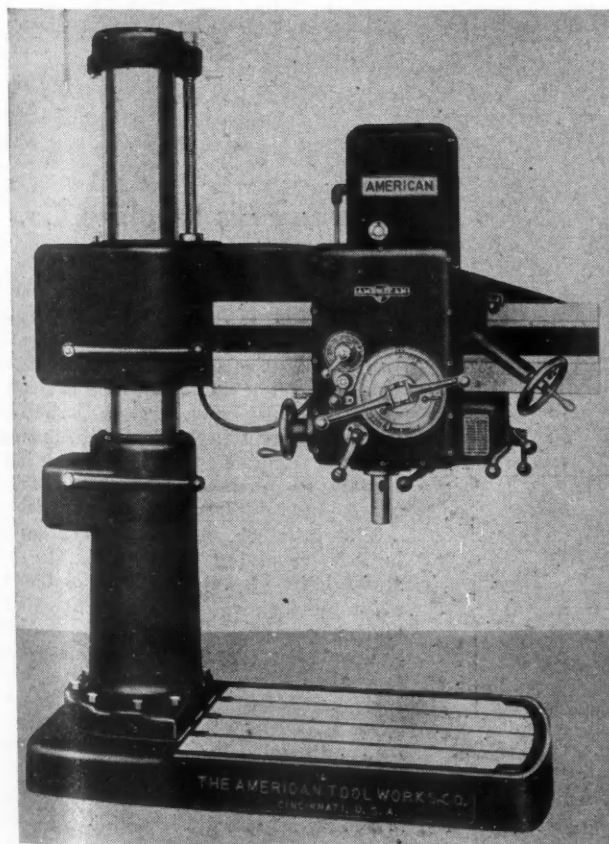


O. S. Walker Co. has new type of magnetic chuck

Swivelling Magnetic Chuck

Designed so that it can rotate through 110 deg., the new swivelling magnetic chuck just announced by the O. S. Walker Co. of Worcester, Mass., is intended primarily for use on face grinders for machine knives, plain shear blades, flying shear blades, etc. The magnetic surface on the face of the chuck is $7\frac{1}{4}$ in. wide, and on the top $6\frac{1}{4}$ in. wide, this magnetic surface being uninterrupted over the edge of the chuck for the entire length of 14 in. Single units up to ten ft. are supplied, while above that length they are made in three sections, the center section being 77 in. long, with the two end sections, each of equal length, welded to the center in such a way as to provide an unbroken magnetic surface throughout the length of the chuck face. Up to 206 in. total length of magnetic surface can be provided in this manner.

In addition to the swivel type, a non-rotating magnetic chuck is also available when required. In this design angle supports are substituted for the pillow blocks and center bearings. Chucks used in the fixed position can be built in independent units and the proper alignment is then obtained through the location of the supporting angles.



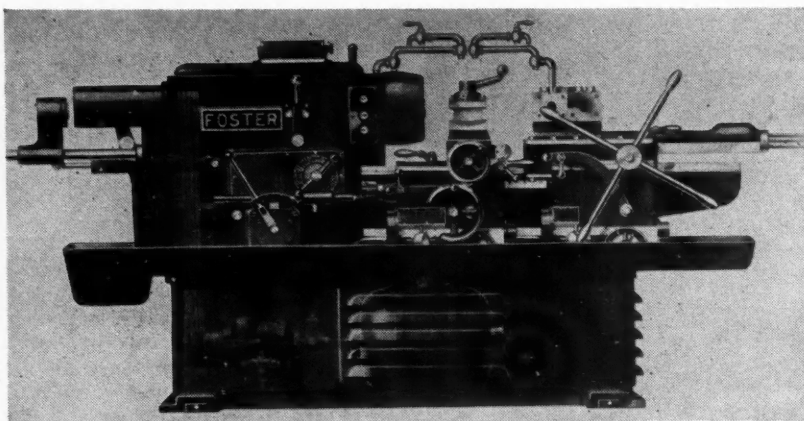
American "Hole Wizard" radial drill

Two-Stage Air Compressors

For installing in close quarters, or where floor space is at a premium, the Gardner-Denver Co., Quincy, Ill., has added the vertical duplex two-stage air compressor to its regular line of horizontal outfits.

The cylinders are of gray iron, cast separately from the crankcase, and fitted with four-ring pistons. Bronze connecting rods and a counter-balanced crankshaft mounted on roller bearings are features of this compressor. All valves are of the plate type, located in the cylinder heads, with each valve in a separate compartment so that it may be removed without disturbing any other valve. A copper "finned" tube intercooler is placed directly back of the flywheel fan.

The unloader valve, operating on the centrifugal principle, is inclosed inside one of the crankshaft counterweights, where it is lubricated by splash from the rods.



Foster Machine Co. displays new lathe

New Cutting Alloys Require New Type Lathe

Designed to take full advantage of the new cutting alloys, the Foster 1½-in. universal turret lathe incorporates many new features claimed to give high productive capacity with simplicity of operation. Manufactured by the Foster Machine Company of Elkhart, Ind., this machine has a four-speed electric motor which drives through a two-speed transmission and "V" belts to the back shaft. These speeds are doubled by means of the drive from the back shaft to the spindle, so that 16 spindle speeds in all are provided. The change from high to low range is by means of multiple disc clutches, and may be made instantaneously while the machine is under cut if desired.

The automatic chuck and the bar feed are hydraulically operated, so that by moving the control lever in one direction, the collet is opened and the bar is fed forward against the stop, while

moving the lever in the other direction closes the collet and moves the feed head back on the bar for the next forward movement. The square turret is automatically indexed by a continuation

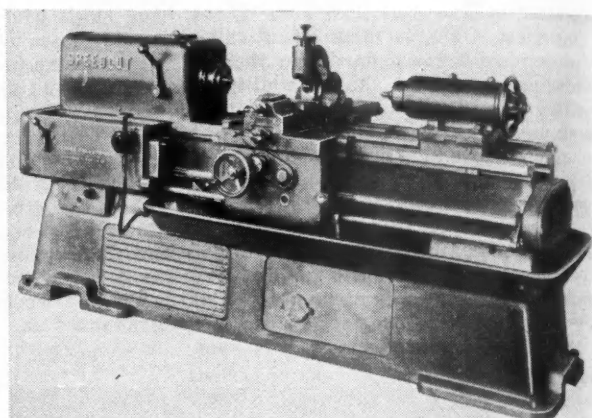
of the unclamping movement of the release lever, and may be indexed one or more stations as desired.

The cross carriage is full universal, having both cross and longitudinal feeds. The nine power feeds, which are all dial selected, can be doubled with a lever at the head, giving 18 power feeds in all.

The Foster No. 7 universal turret lathe is another recent development having 16 spindle speeds which are all dial selected and hydraulically controlled, permitting an instantaneous shift, whether the spindle is in motion, under cut, or standing idle.

To secure long life free from wear, the bed is equipped with nitrided hardened "V" ways fastened from below with closely spaced screws. The turret saddle is also equipped with hardened wear strips.

The hexagon turret is automatically clamped, unclamped and indexed by the forward and backward movement of the turret slide.



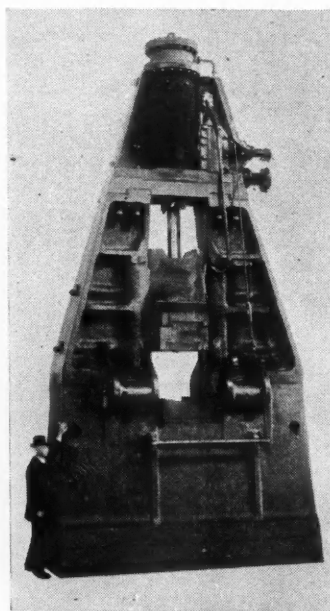
Seneca Falls Speedcut lathe

Forging Crankshafts

Among other applications in the automotive field, the new Chambersburg Model E, steam drop hammer is being used for forging automobile crankshafts. Produced by the Chambersburg Engineering Co. of Chambersburg, Pa., this machine has several interesting features designed to speed up production. A new cylinder together with a new balanced slide valve are claimed to give correct impact velocity, quick pick-up and reduced steam or air consumption.

To balance the increased power the guides for the ram have been increased in rigidity and the frames made heavier. To obtain resistance to twisting the base of each frame lips the anvil forming guides on both sides of a thrust shoulder.

The cylinder, forging hammer and anvils, as well as other parts, are made of "Cecolloy," a nickel molybdenum, iron alloy developed by the Chambersburg Engineering Co.



Chambersburg Model E drop hammer

Seneca Falls Machine Co. Extends Line

One of the new machines announced is the Seneca Falls Speedcut, a lathe constructed to take full advantage of the possibilities offered by carbide cutting tools. The spindle, which is mounted on precision preloaded ball bearings, is driven direct through "V" belts from either a variable speed motor or a New Departure Transitorq unit. Spindle speeds up to 3600 r.p.m. are available.

The tailstock, as illustrated, has a built-in revolving spindle mounted on anti-friction bearings. This lathe is available with automatic rapid traverse to the carriage, in which case raising the control lever starts the main motor and also starts the fast feed of the table until the tool reaches the work, when it is thrown out and the regular feed automatically picks up. At the completion of the cut the tools are automatically withdrawn, the carriage moves rapidly back to the starting point

and the motor is shut off, completing the cycle.

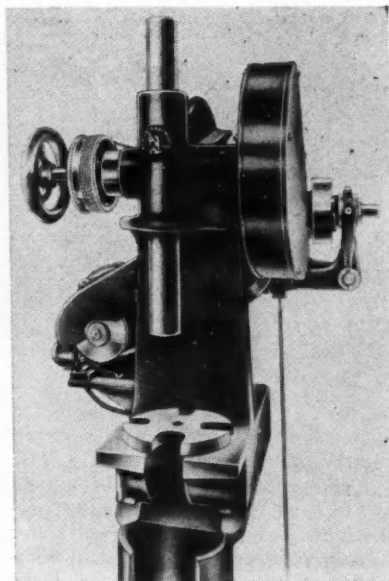
The Seneca Falls Machine Company, Seneca Falls, N. Y., also announces a new Lo-swing Unitlathe especially designed for small and medium sized work. Speed, power, rigidity and high production with long tool life are the features claimed for this machine.

The Lo-swing IMP, another new product, is designed to handle work that is too small for heavy automatic lathes, such as bushings, pistons, valves, bearings, etc. The spindle, mounted on pre-loaded precision ball bearings, turns up to 5000 r.p.m. A positive relation between the longitudinal and cross-feed carriages is maintained, since both are driven from the same drum cam mounted in the bed of the machine.

Another machine being exhibited by this company is the Star automatic drilling and centering machine designed for centering work on a production basis. This is accomplished by using two motor driven independent heads, each with its own closed cycle and independent speeds and feeds. Various combinations are possible, such as drilling, centering and counterboring one end of a shaft while the other end is being centered.

New Full Automatic Face Mill Grinder

This most recent product of the Oliver Instrument Co., Adrian, Mich., will sharpen the teeth of a face mill entirely automatically. The cutter is



Motor-driven arbor press shown by the Edwin E. Bartlett Co.

mounted on a work spindle which is mechanically indexed to bring each tooth under the grinding wheel, where it is held in proper relation by means of a lip rest, attached to a ram which carries and reciprocates the wheel. The form of tooth is governed by a hardened cam which may be varied to suit the special use for which the cutter is intended.

Gearing within the body traverses the ram and also actuates the index mechanism. Two speeds are provided, 15

strokes per minute for roughing and 7½ strokes per minute for finishing. All shafts are mounted on ball or roller bearings.

When grinding a cutter having tungsten carbide inserts, the wheel is kept properly formed and sharp, by passing over a diamond dresser at each reciprocation.

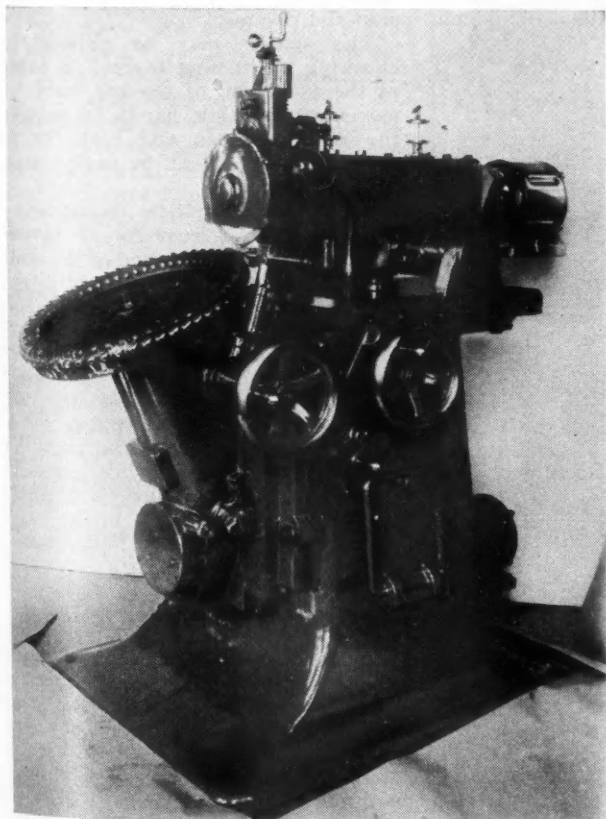
Motor Driven Arbor Press

The Edwin E. Bartlett Co., Nashua, N. H., has a new No. 50 motor driven Greenerd arbor press designed for rapid, continuous work such as assembling, broaching, stamping, etc. A ¾ H.P. motor, through reductions, drives the ram which is controlled by a clutch and foot treadle. An adjustable stroke up to 11¼ inches is obtainable. The press is designed to deliver three tons pressure at the bottom of the ram.

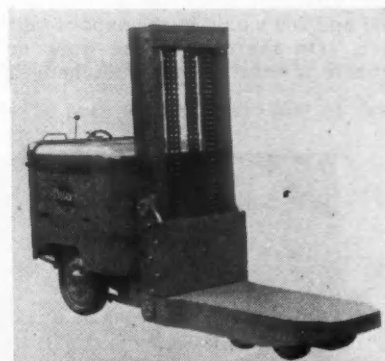
Two other recent products of this company are the No. 30 armature press, and the No. 40 bench type Greenerd arbor press. The latter has a 15-in. movement of the rack, and will deliver 12 tons pressure.

Five Ton "Hylift" Truck

As a companion to its three-ton elevating truck, the Baker-Raulang Company, Cleveland, Ohio, has brought out a "streamlined" five-ton "Hylift" truck, which can be furnished with variations



Oliver Instrument Co. offers automatic face mill grinder



Elevating truck made by Baker-Raulang Co.

in height of lift or platform length as required.

Hoisting is accomplished by two double alloy steel roller chains each having a capacity of 46,000 lb. The hoist unit is a quadruple-reduction spur gear unit with all gears of heat-treated alloy steel, and with all shafts mounted on either ball or roller bearings. The travel of the platform is protected at both upper and lower limits by cut-out control switches.

As on other models manufactured by this company, the worm drive power axle is so constructed that it can move freely in a vertical direction when trav-

eling over rough floors, thereby reducing the road shock transmitted to the frame. The dual trailing axle is also compensating, allowing the truck to ride over road obstructions without danger of tipping the load. Each trailing wheel is mounted on two adjustable tapered roller bearings carried on individual knuckles, which turn on ball thrust and roller radial bearings.

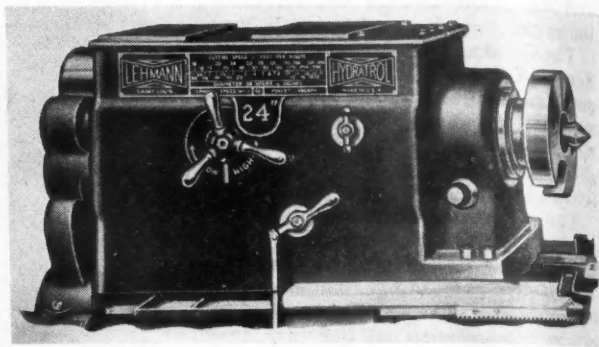
The steering gear is of the worm and wheel type, actuated by a vertical hand wheel. As an aid to ease in handling the main steering rods have needle bearings in all clevis connections.

Ex-Cell-O Precision Thread Grinder Introduced

The Ex-Cell-O precision thread grinder is a self-contained, motor-driven grinding machine designed for wet grinding either right or left hand threads on screws, taps, chasers and worms. Introduced by the Ex-Cell-O Aircraft & Tool Corporation of Detroit, Mich., this machine will grind threads up to 5 in. in diameter and 8 in. long. The wheel spindle is mounted on a swivel and graduations in half degrees are provided so that it may be swung in a vertical plane to a maximum of 15 degrees in either direction, to suit the helix angle of right or left hand threads.

The two speed motor which drives the work head is provided with a four step pulley, furnishing slow work speeds of 31, 55, 82 and 100 r.p.m. in one direction and fast work speeds of 62, 111, 165 and 200 r.p.m. in the opposite direction. On the end of the work drive spindle is attached an interchangeable

Lehmann "Hydratrol" lathe



master lead screw which is selected to suit the pitch required.

A work positioning and backlash device is used, which permits the proper positioning of the thread groove in the work in relation to the grinding wheel. A back-off attachment is furnished for grinding relieved threads. Cams with flutes, corresponding to the number of flutes on the work and connecting through linkage, operate an eccentric sleeve within which the grinding wheel spindle is mounted.

Other exhibits of this company include a precision boring machine, a vertical drill press, a hydraulic power unit, and a cemented carbide tool grinder.

Automatic Slide Rule on Hydratrol Lathe

Speed changes on the Lehmann "Hydratrol" lathe are effected by turning the three lever handle on the front of the headstock, illustrated. This may

be turned without intermediate stop to any speed desired, and it is unnecessary to disengage the friction driving clutch when a speed change is made. Coordinating with the movement of the handle is the automatic slide rule which shows spindle revolution per minute, and indicates a slide rule calculation of the cutting speeds in feet per minute. Diameters of work, within the range of the lathe, are given on the sliding member and register with the effective cutting speed on the stationary scale. The speed changing handle is moved until the diameter of the work registers with the specified cutting speed in feet per minute, and the lathe automatically makes the necessary changes for the predetermined requirement.

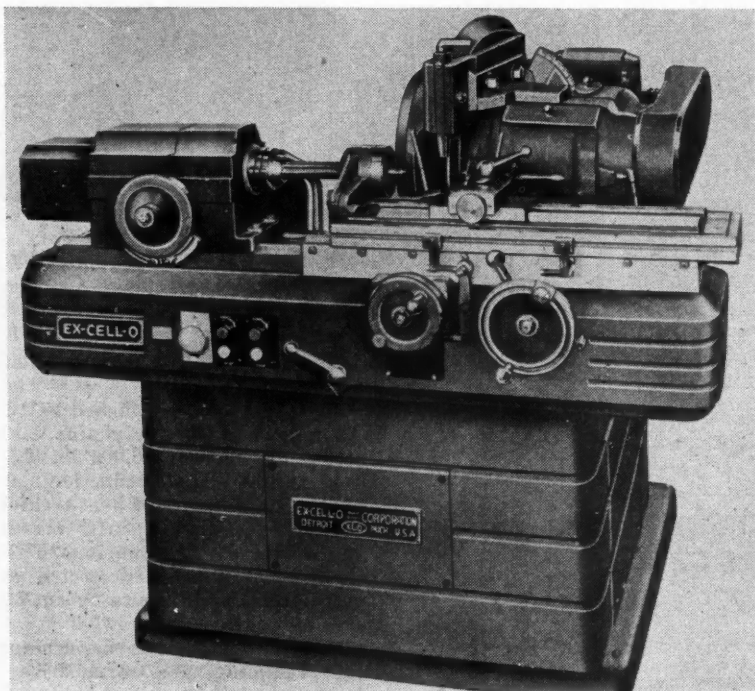
A product of the Lehmann Machine Company, St. Louis, Mo., this lathe is said to have a very sensitive control, making it possible to start and stop the spindle many times during one revolution. The one control lever, which is just below the speed change handle, has three positions, forward, stop and reverse.

The spindle may be released for chucking by turning a small T handle at the front end of the headstock. A movement of this handle disengages the positive clutch and brake on the spindle so that it can be easily turned by hand.

Two types of spindle mounting are used. The first consists of tapered roller bearings at each end of the shaft, and the second consists of an adjustable sleeve type front bearing with two opposed radial thrust bearings at the rear. With either type, positive lubrication is furnished by the oil pump which also supplies filtered oil to the hydraulic operating mechanism and to all running parts in the headstock.

The Fellows Gear Shaper Company

The Fellows Gear Shaper Company, of Springfield, Vt., is exhibiting in addition to its standard line the following new products: roughing and finishing gear shapers; an hourglass gear shaper, for shaping worms, with a new-type cutter; a worm lapping machine for lapping straight worms after hardening, and a helical cutter sharpening machine with automatic feed.



Ex-Cell-O thread grinder

Gould & Eberhardt Introduce Two New Machines

The latest developments of Gould & Eberhardt, Newark, N. J., include a universal gear hobbing machine and a tool room shaper. The former known as model 72-H is especially designed for the production of spur, worm, and single and double helical gears, and has a capacity to cut gears up to 48 in. in diameter within the support, and 80 in. in diameter with the support removed.

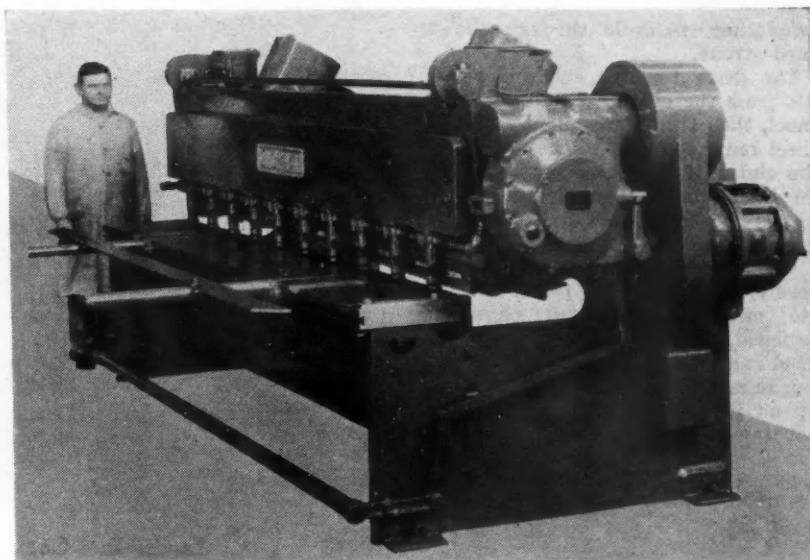
This machine is of the vertical cutting type, with the hob slide mounted on an adjustable stanchion, and traveling on double rectangular guides. The stanchion is adjusted along the base for the depth of tooth to be cut, and the swivel cutter support has an angular adjustment of 180 deg. for cutting right and left-hand helical gears. Power traverse is provided for moving the hob slide rapidly in either direction, and may be operated with the cutters and work spindle rotating, or at rest.

A differential mechanism for cutting helical gears is built directly into the machine to correlate the work rotating and cutter feeding mechanisms. A feature of this construction is that it can be entirely disconnected for cutting spur and worm gears and for cutting helical gears by the non-differential method.

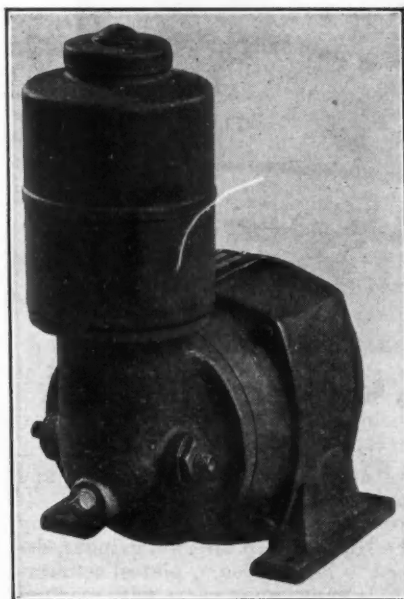
The new tool room shaper, mentioned above, is designed especially for tool and die work and for shaper work of small character where speed and accuracy are of importance.

A departure from the conventional design in this machine, is the table guide-way construction. Arranged with a single plate and narrow guide for the table slide, it is claimed this structure deflects only half the amount of the usual type cross-rail.

The table is provided with a rapid power traverse operating in either direction, and an automatic crossfeed operated by a single cam synchronized with the return stroke of the ram.



Cincinnati Shaper Co. displays new shear



New Farval Lubricating System

The Farval Corporation of Cleveland, Ohio, announces its new type C system of machine lubrication. The new pumping unit has been simplified by the elimination of check valves, stuffing boxes, etc., so that it only contains two moving parts. Positive, piston displacement type valves are located at the bearings and control the delivery of lubricant to the central pumping unit by means of a single main line of tubing.

An adjustable timer accurately governs the operation of this system, delivering lubricant at any desired frequency.

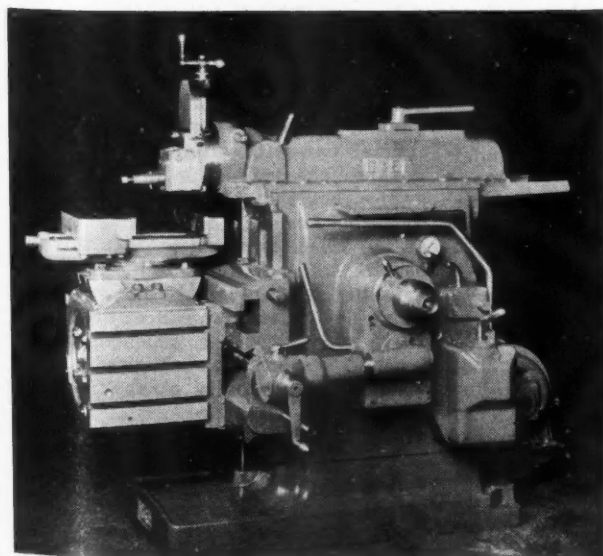
New Cincinnati Shear Speeds Production

As a companion machine to its all-steel press brake, The Cincinnati Shaper Company, Cincinnati, Ohio, has put on the market an all-steel shear, especially designed for high-speed operation. The $\frac{1}{2}$ in.-10 and 12 ft. shears run at forty strokes, and the $\frac{1}{4}$ in.-10 and 12 ft. shears at sixty strokes per minute. Square shearing, notching or slitting can all be done at these speeds.

The hydraulic holddowns, consisting of a series of independent plungers on 12 in. centers and actuated by oil pressure, can be regulated at will for different materials. The holddowns are located close to the cutting edge, so that they are effective on narrow strips, and since each plunger exerts a uniform pressure regardless of the amount of its movement, short pieces of different gage can be sheared side by side at the same time. When the knife reaches the bottom of its stroke the holddowns release completely, so that the operator can prepare for the next cut while the knife bar is still

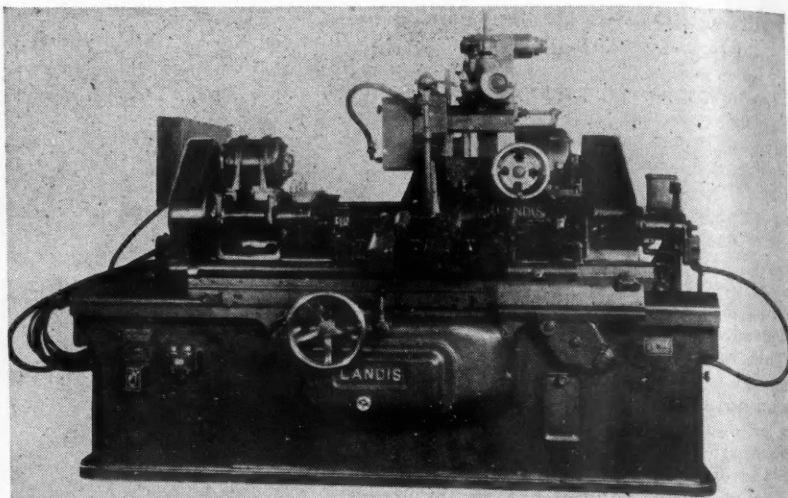
(Above) Farval pump has only two moving parts

Gould & Eberhardt tool room shaper

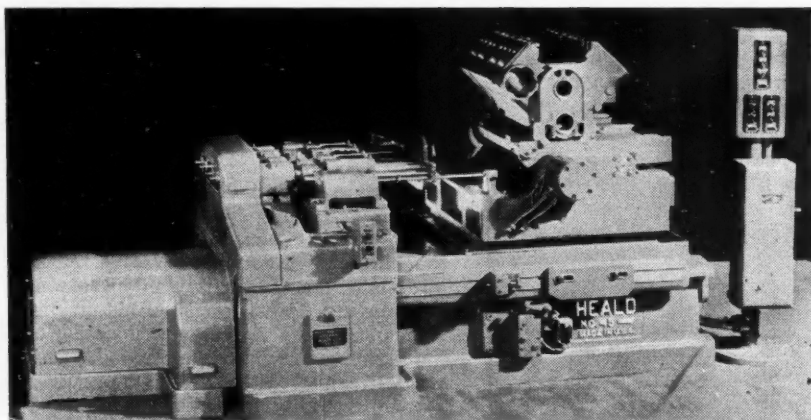


completing its cycle through the upward stroke.

The drive for this shear is by "V" belt from the electric motor to the flywheel, then through a silent worm and wheel reduction unit to the main shaft. The clutch that meshes with the drive wheel is slidably mounted on a hardened splined sleeve on the drive shaft, in such a way that when the clutch pin is withdrawn, by depressing the foot treadle, a heavy spring forces the jaws into mesh. The clutch parts are hardened, and with the worm and wheel run in a bath of oil. Safety friction discs allowing the flywheel rim to slip on its mounting are used to prevent damage from overload.



Landis Tool Co. offers grinder with automatic sizing



Heald Machine Co. No. 45 "Bore-Matic"

Heald Has Many New Machines

Among the new machines at the show, The Heald Machine Company, Worcester, Mass., has several working on automotive parts. The No. 45 "bore-matic" precision boring machine, illustrated, is designed for finish boring multiple cylinders up to 9 in. diameter. The bridge for the boring heads is stationary and the reciprocating table, hydraulically operated, is supported on large, widely spaced ways that are covered to keep them free from dirt and are lubricated by a constant flow of oil under a predetermined pressure.

The drive to the boring head is by multiple "V" belts from an idler pulley unit mounted on a subbase located to the left end of the main base. The control panel, mounted on a stand adjacent to the machine, contains the push buttons which manually control the stopping and starting of the main drive motor as well as the rapid traverse in and out of the table. The control of boring head and facing feeds is by screw adjustment on the boring and facing valve located at the front of the base. Table cams operate both this

valve and the switch for starting and stopping the boring head motor.

Another new product of this company is the No. 72A gap internal grinder, designed to handle gears, plates, connecting rods and similar parts, with medium size holes but requiring a generous work swing. This machine is arranged with a hydraulic drive for the table and a quick acting truing device. The work guard, which completely shields the work, is opened and closed hydraulically.

Other recently announced machines include the No. 73 airplane cylinder grinder, the No. 81 centerless "gage-matic" for grinding ball thrust races, and the No. 49 double-end precision boring machine for multiple work, or boring single pieces from both ends.

Yale "Pul-Lift"

The Yale & Towne Manufacturing Company, of Philadelphia, Pa., has introduced a new-type hoist, known as "Pul-Lift," the name being derived from the fact that it may be used in either a horizontal or vertical position, and so is equally adapted to pulling or lifting. It is made in $\frac{3}{4}$, $1\frac{1}{2}$, 3 and 6-ton capacities.

Easy operation is claimed to be due to the design of the lifting mechanism, consisting of a ratchet and pawl on the smaller models, and of a gear reduction on the larger models. The stroke of the handle may be varied to suit the particular application. The Weston type of self-actuating load brake is said to hold the load firmly at all times.

Hydraulic Grinder With Automatic Sizing

Designed for the grinding of multi-diameter shafts, the 10 in. type C semi-automatic hydraulic grinder is one of the most recent additions to the line of grinders manufactured by the Landis Tool Co., Waynesboro, Pa. It is equipped with three constant speed electric motors, 1 hp., 2 hp., and 15 hp., being used to drive the work, the pump, and the grinding wheel respectively.

A standard reciprocating spindle mechanism is used, the control being conveniently placed in the front of the wheel base. A hydraulic, straight in-feed mechanism, controlled by a solenoid, is standard on the type C machine. An interesting time saving feature of this feed is the arrangement which compensates for the different points at which grinding begins, when varying diameters are being ground. A control bar with different length pins governs the rate at which the wheel approaches the work, so that the slow grinding feed will not start until just as the wheel comes in contact with the bearing to be ground. After the rough grinding is completed the automatic sizing device further reduces the rate of feed, and when the finished size is reached, a solenoid is energized and the wheel moves rapidly away from the work.

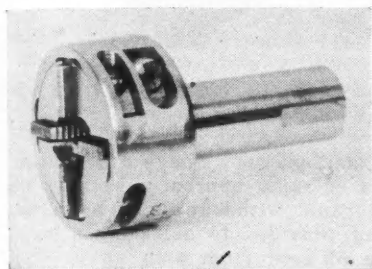
The wheel truing mechanism is of the hydraulically operated type.

Another new machine being exhibited at the show by the Landis Tool Company is the type D hydraulic cam grinder.

H & G Dies of New Design

The Eastern Machine Screw Corporation of New Haven, Conn., which has specialized in the insert chaser type of self-opening die heads, has a new H & G solid adjustable die head using similar chasers. The advantages claimed for this new tool are its light weight, about one-quarter of the corresponding self-opening head, and its adaptability to work where solid dies are preferred, permitting manufacturers to take advantage of the low cost and ease of replacement of insert chasers.

The regular line of self-opening die heads is being continued in which the chasers are held in carriers which take all the thrust. The insert chasers are held in place by a single screw that has a draw-in feature which locks the in-



Eastern Machine Screw Corp. offers new H & G dies

sert back in the carrier so as to insure trackage and even distribution of the cut. The makers claim that chasers may be changed in approximately two minutes, since they locate themselves in the carriers and do not have to be adjusted.

A new type of threading machine having a variable speed drive, in which any speed required may be obtained by simply turning a control handle, has just been announced by this company. This construction makes it possible to operate at maximum efficiency for the stock and class of work being handled.

New High Speed Radial Drill

The Cincinnati Bickford Tool Company, Cincinnati, Ohio, has just announced a new high speed, all geared, radial drill, built with either a three or four-foot arm and with a nine-inch diameter column. Spindle speeds up to 3500 r.p.m. are provided without the use of belts, all speed changes being made at the head through heat-treated alloy steel sliding gears. A single lever controls all nine speeds. Feed changes are also made through sliding gears controlled by a single lever.

The head is fully enclosed, and the arm has a solid rear wall completely enclosing the arm shaft. If desired the arm may be provided with power elevation controlled by the lever which is used to clamp and unclamp the arm to the column. To aid in handling, the arm and head are balanced and the head is mounted on anti-friction bearings. The feed engagement clutch, which is of the

positive type, may be automatically disengaged by setting the graduated dial depth gage when using power feed.

An interesting feature of this drill is the fact that no forward or reverse spindle-driving clutches are required, a reversible electric motor being used instead. The lever at the lower left of the head operates built-in push-buttons, and thus controls the forward and reverse rotation and stopping of the spindle.

Madison-Kipp Presents New Die-Casting Machine

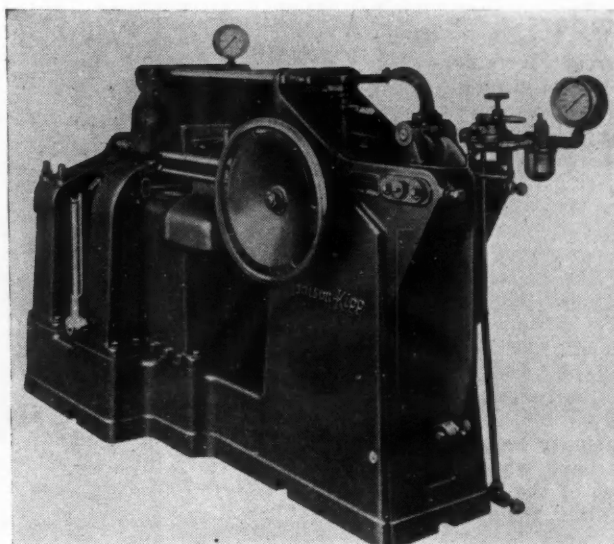
Intermediate in size, the latest Madison-Kipp die-casting machine, known as Model No. 6, will handle all of the standard die-casting alloys in zinc, aluminum, lead or tin. A product of Madison-Kipp Corporation, Madison, Wis., this machine has a pot capacity of 300

lb. in zinc alloy, and is regularly equipped with an air-pressure goose-neck having a capacity of 5 lb. in zinc alloy.

The speed at which this machine can be operated is determined by the rate of solidification that can be maintained in any given die, rapid solidification being aided by means of water-cooling channels in the dies.

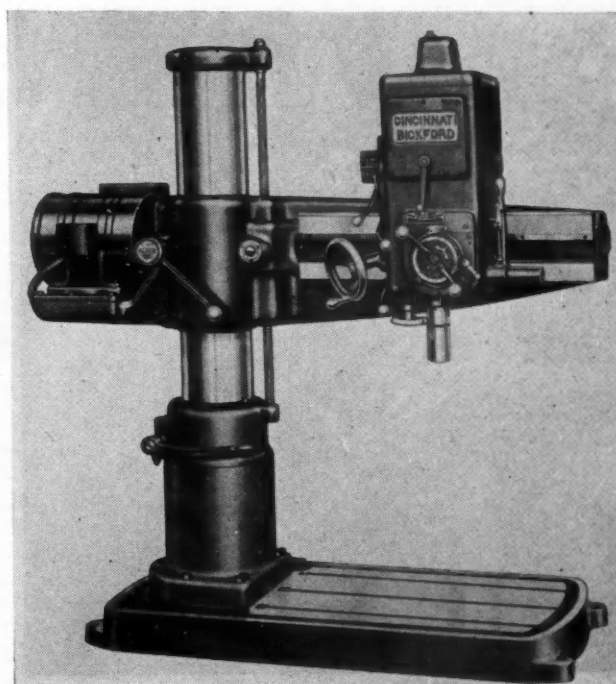
Safety features are provided so that the metal cannot be shot into the die until the die halves are closed and locked in position. A hand wheel is provided for die setting and for auxiliary hand operation whenever this becomes necessary, otherwise the entire machine is operated by power.

The standard Madison-Kipp automatic core-pulling mechanism may be applied to this machine so that all cores are placed and withdrawn as the dies open and close. Ejection of the castings is automatic with the opening of the dies.



Madison-Kipp No. 6 die-casting machine

Radial drill of the Cincinnati-Bickford Tool Co.



New Norton Grinders

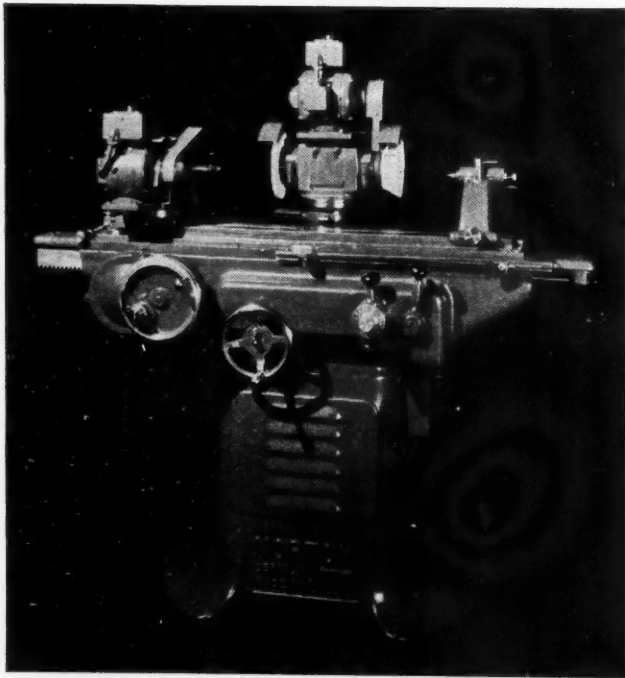
The Norton Company of Worcester, Mass., is adding a new crankpin grinder, a new C type semi-automatic grinder, a new lapping machine, and two new tool and cutter grinders to its present line. In announcing these new products, the company states it has adopted the general practice of mounting the wheel drive motor directly on the wheel unit of all its cylindrical grinders, drive being through multiple vee belts without idlers or intermediate shafts. The spindle bearings are flood lubricated with filtered oil, and the wheel slide ways are force feed lubricated.

The D-86 crankpin grinder requires but two levers and one hand wheel to operate the machine, one of the levers controlling the work rotation, the opening and closing of the work holders, the rapid and slow traverse of the wheel unit up to or away from the work and the rapid movement of the table from one pin to another. The second lever is used for "jogging" the table to bring the pin being ground in line. The hand wheel feeds the wheel into the work.

Another feature of this machine is the hydraulically operated steadyrest that drops down clear of the work when moving from one pin to the next.

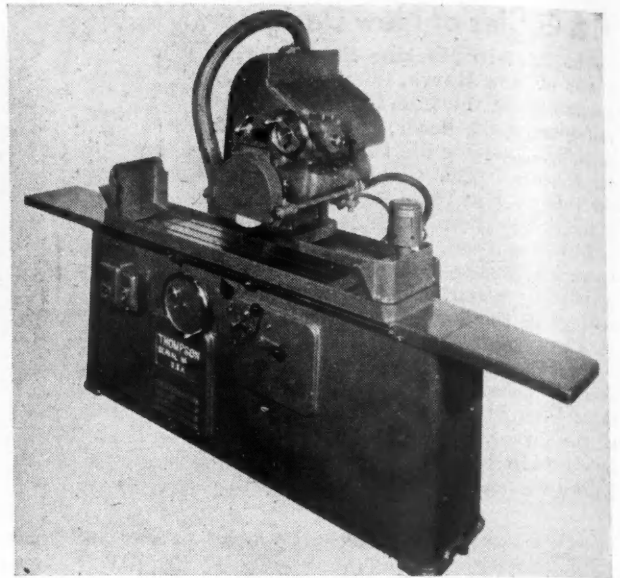
Norton's new lapping machine is hydraulically operated and designed for high production lapping of work up to 6 inches in length. Twenty-four inch diameter abrasive laps are used, both of which rotate, but in opposite directions and at different speeds, causing the work to travel in a circular path.

The No. 2 universal tool and cutter grinder, illustrated, is equipped with a hydraulic table traverse mechanism for cylindrical or internal grinding. The wheel spindle is of the cartridge type running in two bronze bearings.



Norton Co. showing new tool and cutter grinder

Thompson Grinder Co. has new model "B" Special



Hydraulic Feed Drilling Units for Old Machines

The Hoefer Manufacturing Co., Freeport, Ill., is producing self-contained, hydraulic feed drilling units designed for mounting on obsolete machines to bring them up to date. These units, which are obtainable in sizes ranging from 1½ to 10 hp., can be used in any position, horizontal, vertical or at an angle.

The main spindle extends through the hydraulic cylinder ram and is mounted at the front end in such a way that a multiple spindle head can be used if desired. The hydraulic feed mechanism includes a herringbone gear pump, an oil reservoir, a relief valve, a compensating feed valve, and a cylinder

and piston. The work cycle consists of rapid approach, working feed and rapid withdrawal, an adjustment being provided to quickly change the rate of feed from zero up to 40 in. per minute.

New Hydraulic Surface Grinder

A surface grinder, hydraulically operated, and known as Model "B" Special, is a new product of The Thompson Grinder Company, Springfield, Ohio. In this machine the grinding wheel and electric motor armature are mounted on the same spindle in order to eliminate vibration and reduce maintenance costs. The spindle is alloy steel, heat treated, ground and lapped, and operates in an adjustable bronze bearing in front and in a set of matched spindle ball bearings at the rear. Ventilation is accomplished by means of a large fan on the rotor which draws air at the rear of the wheel head and expels it at the rear of the stator coil. The spindle bearings are protected from foreign matter by a series of seals, and are lubricated by filtered oil which is not recirculated after it has once been used.

The oil pump, which provides hydraulic pressure of 150 lbs. at the control panel, is direct motor driven, the entire unit being mounted on rubber blocks to absorb vibration. The control panel is arranged so that all the controls are within easy reach of the operator, one lever controlling the table feed and the other wheel head movement. The elevating hand wheel is graduated to .0005 in. and has a vernier arrangement permitting the reading of .00025 in. increments. Where frequent movements of the wheel head are required, a hydraulic counterbalance or an electric drive is available to supplement the standard elevating hand wheel.

Hydraulic Control Added to New Porter-Cable Lathe

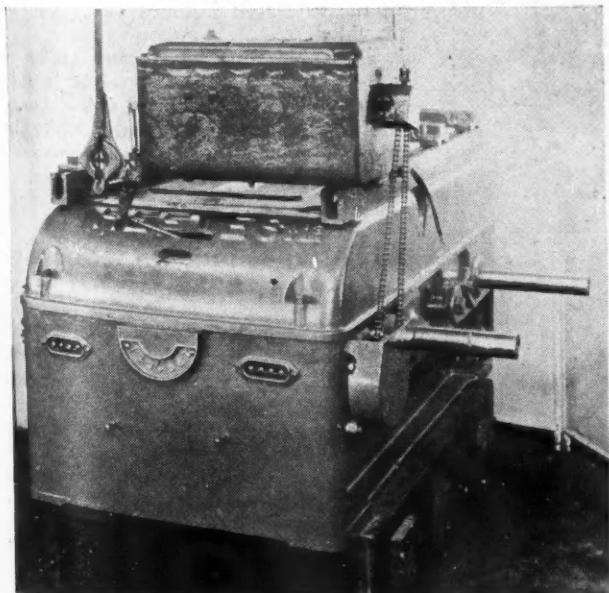
The Carbo hydraulic lathe is Porter Cable's newest offer to manufacturers of duplicate parts of small and medium size. It can be supplied with a low speed head, giving spindle speeds of 95 to 1130 R.P.M., or a high speed head having spindle speeds from 167 to 1978 R.P.M. Any desired feed may be had from zero to 24 in. per minute by means of the hydraulic feed which controls all tool slides. The construction is such that any one tool slide may be operated independently of all the others or all may be operated simultaneously.

The Porter-Cable Machine Co. of Syracuse, N. Y., state that the carbo lathe is designed especially for use with the new high speed alloy cutting tools, and that due to its full automatic cycle, speeds production. This complete cycle consists of rapid advance of the tools to the work, slower feeding rate, then rapid return to the loading position.

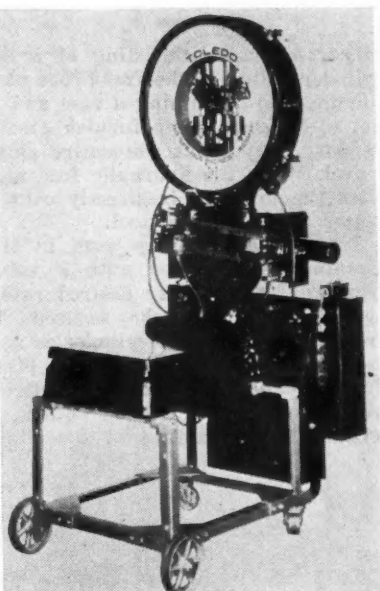
This company is also exhibiting its 6-in. sander and grinder, which employs a motor-driven abrasive belt traveling over a flat metal bed. Any belt speed up to 4000 ft. per minute can be had by attaching the proper ratio pulley to the driveshaft.

"Hydraumatic" Control For Reeves Transmissions

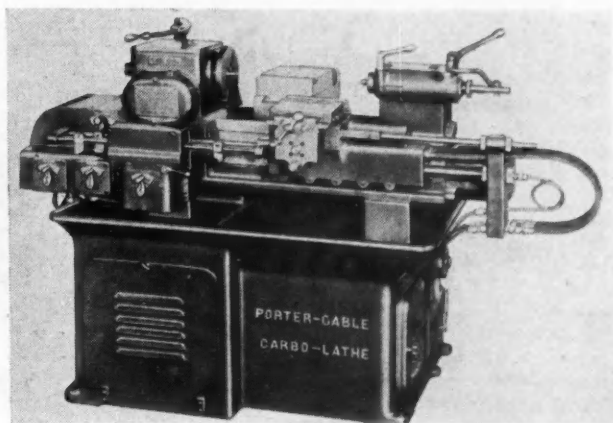
"Hydraumatic" is the name given by the Reeves Pulley Company of Columbus, Ind., to its hydraulic, automatic control mechanism designed for use in connection with Reeves variable speed transmission. It is claimed to be so sensitive that a pressure of only two or three ounces is required to move the lever to bring about a change in speed. All operating parts of the control, except the driving motor, are housed in



Reeves Pulley Co. has "Hydraumatic" control for transmission



Toledo Scale Co. equips scale with photo electric cut-off



Porter-Cable Machine Co. offers lathe with hydraulic control

a dust-proof case mounted above the transmission.

The electric-driven pump maintains a constant oil pressure that is regulated by a relief valve, and any movement of the control lever operates a valve that admits the oil to the fluid motor. This motor is connected to the shifting screw of the transmission by a sprocket and chain, and will actuate the transmission to increase or decrease the speed, depending on which way the control lever is shifted. It is claimed that there is absolutely no "hunting" in reaching the desired speed, and that once reached it is held constant.

Toledo Scales

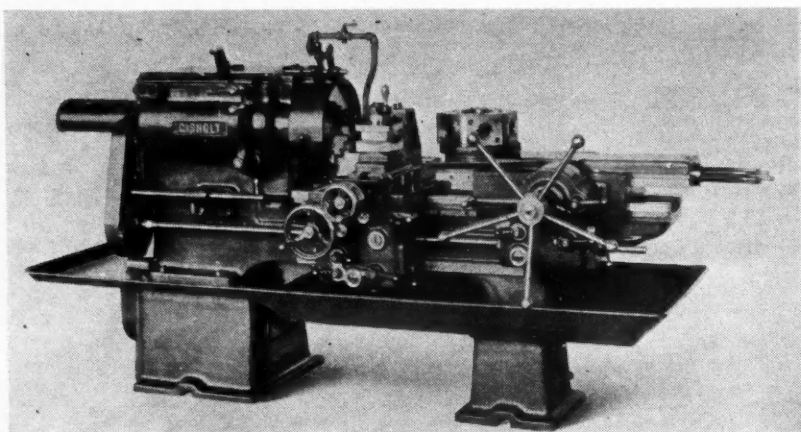
The unit illustrated consists of a Toledo bench type dial scale equipped with a double photo-electric cut-off device and electric automatic taring arrangement. This product of the Toledo Scale Co., Toledo, Ohio, is intended for continuous and automatic operation in conjunction with electric vibrator conveyors for handling metal parts. This is an interesting application of the photo-electric cut-off as it is claimed to be the only method of applying a cut-off device that does not interfere with the weighing accuracy of the scale.

Another product of interest in the automotive field is the Toledo bench type scale with a 10:1 and 100:1 ratio counting attachment, which is said to practically eliminate the human element in parts counting.

Laces 6-Inch Belt In 1½ Minutes

The Clipper Belt Lacer Co., of Grand Rapids, Mich., announces its No. 6 belt lacer as a smaller companion to the present No. 8 machine. It is said to be capable of lacing belts from 1 to 6 in. wide inclusive, in 1½ min. A ¾-turn of the crank exerts a pressure of 37,500 lb., embedding the hooks flush with the surface.

This company also presents the No. 0 lacer, designed for use in a vise. It will handle a 4 or 6-in. belt up to ¾ in. thick in one operation.



Gisholt No. 3 turret lathe

New Gisholt Turret Lathe

Designed for fast manipulation of light work, the new No. 3 lathe is the latest addition to the line of turret lathes produced by the Gisholt Machine Company, Madison Wis. An all-hardened, heat-treated steel headstock provides six spindle speeds which may be obtained in the normal speed range of 65 to 730 R.P.M. for general purpose work, or with a higher or lower range for specific needs. These six speeds are in two groups of three high and three low speeds, with a multiple disc clutch between, permitting an instantaneous shift from one group to the other without stopping the spindle. A single control lever just behind the chuck on the side of the headstock starts, stops and reverses the spindle, an automatic brake being applied when this lever is in the neutral position. A safety latch prevents accidental starting.

Hardened steel ways are attached to the bed, and ground in place in alignment with the bores of the spindle bearing cups. The spindle itself is machined and ground from a hollow bored, high carbon steel forging, and is mounted on widely spaced bearings designed to resist the radial pressure from heavy cuts.

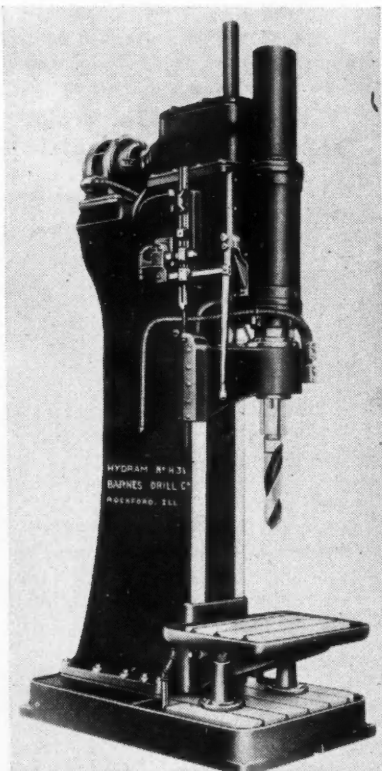
On the universal model of the No. 3 lathe the cross slide has eight power feeds, both cross and longitudinal, and reverse in both directions. The apron contains these eight selective feeds which are independent of the turret feeds. The turret tool post is of automatic design, indexing from one station to the next by a to and fro movement of a lever which unclamps, indexes and clamps the turret.

Hydraulic Ram Feed on Heavy Duty Drill

A new product just placed on the market by the Barnes Drill Co., of Rockford, Ill., is the H-3½ Hydram boring and drilling machine, designed to take up to a 4-in. diameter twist drill. A feature of this drill is the

"Hydram" unit, consisting of a large cylinder bolted to the front face of the column, and containing a ram and piston so designed as to furnish constant support throughout the entire spindle travel. When the hydraulic feed is applied the pressure is directly over the center of the cutting tool.

The hydraulic pump used in these machines is provided with a volume regulator so that any desired rate of hydraulic feed can be secured. The area in the hydraulic cylinder is about the same on either side of the piston, thus providing uniformity of action in rapid approach and rapid return, according to the setting of the control

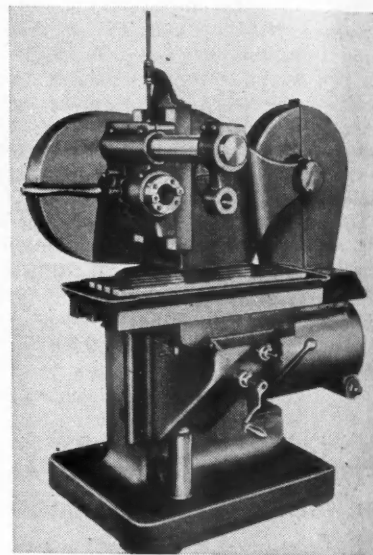


Hydraulic ram feed on Barnes drill

stops. The slowest hydraulic feed is about one-half inch per minute, and this may be increased up to 16 in. per minute as the fastest normal feed.

Cam Controlled Table Feed in New Kent-Owens Miller

The table feed of the new No. 26 Kent-Owens milling machine, latest product of the Kent-Owens Machine Co., Toledo, Ohio, is cam controlled, which permits any desired cycle of automatic table movement. A feature of this construction is that if any revision



Kent-Owens milling machine

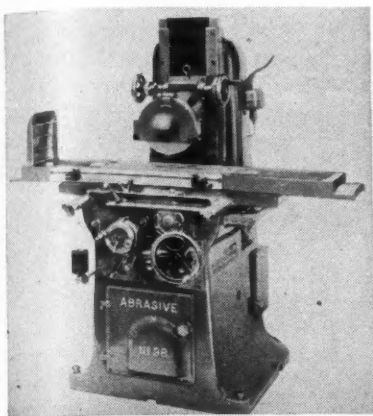
in the table cycle becomes necessary the controlling cam can be readily replaced.

Roller bearings are used on both the backshaft and spindle to facilitate high cutting speeds when desired on non-ferrous metals, or in the use of cemented carbide tools. The standard speed of the belt driven spindle is 2000 r.p.m., although higher speeds can be provided.

The table working surface of 36 in. x 8¼ in. with three tee slots is said to permit the mounting of two fixtures, one of which can be unloaded while the other is under the cutter, thereby increasing the output of the machine.

Abrasive Machine Tool Co. Introduces New Grinder

As a companion to its smaller surface grinder, the Abrasive Machine Tool Co., East Providence, R. I., has added the new model 3B, with a horizontal spindle and a reciprocating table having a longitudinal movement of 24 inches. Two table speeds of 20 and 40 ft. per minute respectively are provided, the change in speed being made with a push-pull knob at the front of the gear box.



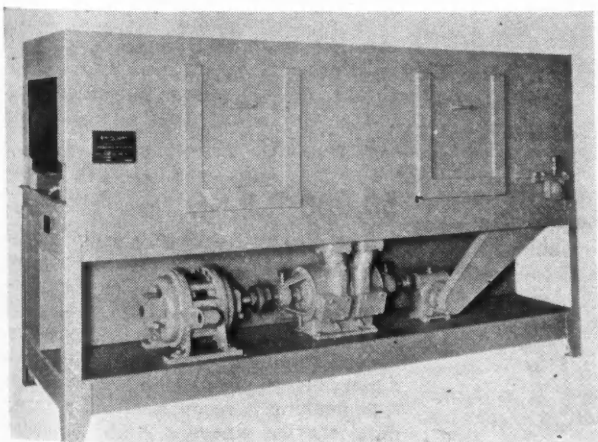
**Abrasive Machine Tool Co.
Model 3B surface grinder**

The chrome steel spindle which is carried in an adjustable phosphor bronze box at the front and on precision ball bearings at the rear, is driven by an endless woven belt at a normal speed of 2290 r.p.m. The entire spindle assembly is mounted in a removable cart-ridge type housing. The wheel slide is provided with one hand wheel graduated in $\frac{1}{4}$ thousandths for fine feed and one hand wheel with 3 to 1 ratio for quick movement.

The table feed is automatic in both the longitudinal and transverse directions, although a transverse hand wheel with micrometer adjustment and dial graduated in thousandths is also provided. The table hand wheel has an automatic lock-out so that it will not revolve when the power feed is thrown in, and cannot be engaged. A built-in oil shock absorber in the gear case cushions the shock of table reversal.

Cleaning Parts in Process

The Colt Autosan, illustrated, is a standard washing and rinsing machine designed to thoroughly clean a wide variety of parts. Manufactured by Colt's Patent Fire Arms Manufacturing Company of Hartford, Conn., this unit can either be used separately or in conjunction with the Colt dryer, to handle parts in process. A wire mesh conveyor carries the parts through power-



**Hobart
75-ampere electric
arc welder**

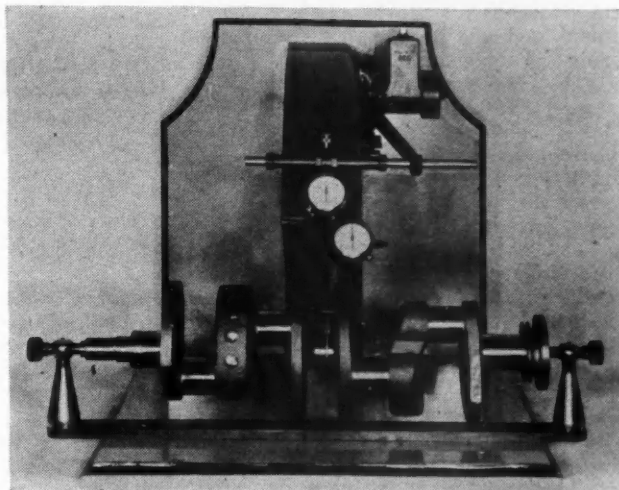
**Washing and
rinsing machine
made by Colt's
Patent Fire Arms
Mfg. Co.**

ful sprays issuing from 12 tubes, three above and three below, in both the wash chamber and the rinse chamber. These tubes are all easily removed for cleaning without the use of tools.

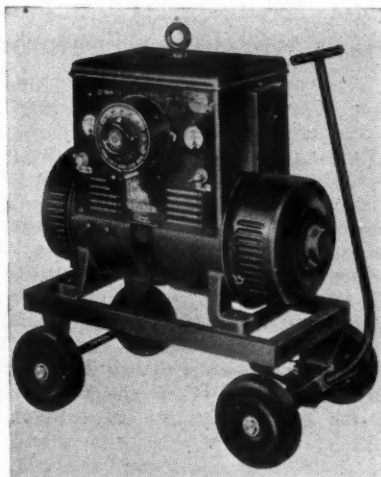
The Autosan dryer contains a revolving drum with internal fixed spiral. Parts are dried by blasts of circulating hot air as they are carried through the machine.

Checking Automobile Crankshafts

The Arnold gage is being exhibited at the show by Federal Products Corporation, Providence, R. I. The illustration shows this gage in position on an automobile crankshaft where it automatically registers the diameter of the shaft bearing as well as the width.



**Arnold gage ex-
hibited by Feder-
al Products Co.**



Mounted on the grinding wheel guard, a hydraulic fixture carries the gage up out of the way and holds it there when not in contact with the shaft bearing.

It is claimed that with the instrument in place no delays are necessary for gaging while grinding, as the operator can continuously see the size of the work to within .0001 inch.

New Arc Welder for Light Gage Metal

The latest Hobart 75-ampere electric arc welder is especially designed to weld light-gage metal down as low as .025 in. thick. The motor, generator, exciter and cooling fan are mounted on a single, heavy-duty shaft mounted on ball bearings. 1750 r.p.m. is the normal operating speed.

Like other welders manufactured by the Hobart Brothers Co., Troy, Ohio, this machine has remote control, which permits fine adjustment of the current right at the work no matter how far it may be from the machine.

The triple-range selector with the volt-amp adjuster gives more than 400 possible combinations of open-circuit voltage and welding current. A polarity switch makes available either straight or reverse polarity without the necessity of changing cables when changing from one type of welding rod to another.

The welder is provided with a separate voltmeter and ammeter.

Three New Machines By Brown & Sharpe

Brown & Sharpe Mfg. Co., Providence, R. I., are announcing three new machines of interest to the automotive trade: a No. 12 plain milling machine, a No. 5 surface grinding machine, and a No. 0 omniversal milling machine. The first of these is a compact production job designed for the duplication of medium size parts, having a table travel of 18 in., with a 7½-in. vertical adjustment and a 3¼-in. transverse adjustment of the spindle.

This machine features electric control, four push buttons governing all table movements in either direction. Automatic control is provided through trip dogs engaging switch contacts. A jog push button is provided for spindle rotation when setting the cutters.

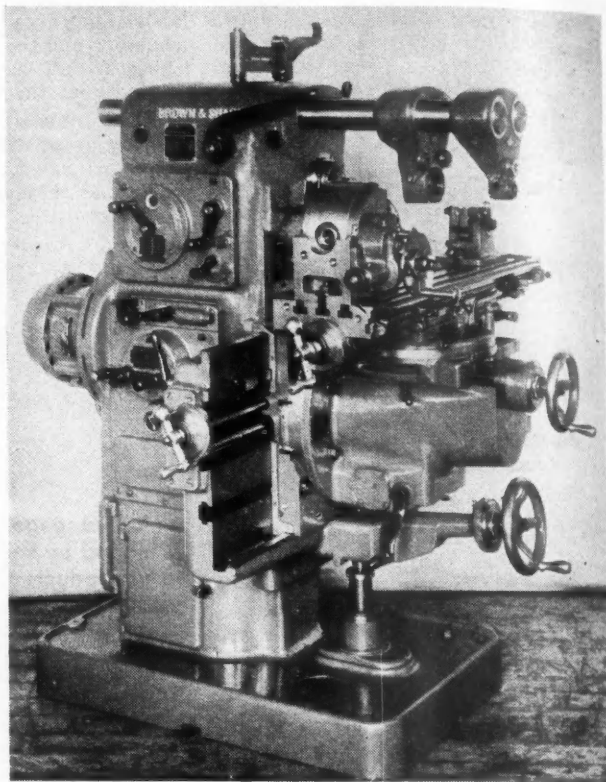
The table has a full automatic cycle, including power fast travel and slow cutting feeds in either direction. An automatic backlash eliminator makes it possible to rotate the cutters in the same direction as the feed, or in the conventional method, to rotate against the direction of feed.

The No. 5 surface grinding machine has a spindle unit of the cartridge type, easily removed for adjustment. The table is hydraulically operated, providing any desired longitudinal feed up to 60 ft. per minute and an automatic transverse feed up to .15 in. per reversal of longitudinal travel.

The wheel spindle is driven by a 1½-hp. motor mounted at the lower end of the wheel slide, a separate motor being used to operate the pump for the hydraulic feeds of the table.

Designed primarily for toolroom and experimental laboratory use, the No. 0 omniversal milling machine, illustrated, provides an easy and accurate method of obtaining simple and compound angular settings for milling and boring operations. Angular settings of the table, in both the vertical and horizontal planes, may be made with accuracy by means of verniers reading to two minutes of arc.

**Brown & Sharpe
No. 0 Omniversal
Milling Machine**



Gear Generating Machine Has Several New Features

The cutter relief mechanism on the new Farrel-Sykes gear generating machine is said to permit a higher operating speed, thus increasing production, and also to improve the accuracy and finish of the work. This mechanism automatically withdraws the cutters from the work during their return stroke and thus prevents damage to the cutting edges of the tools, prolonging their life. During the cutting stroke, the housing carrying the cutter spindles is positively locked, and the cams which effect the withdrawal of the cutters are out of contact, in

order to insure accuracy of the work.

Helical guides of a new design are used on this machine. In place of one groove and one shoe in each guide, two are now provided, and in the smaller machines the shoes are carried in a flanged sleeve which also carries the reciprocating guide member, making a removable unit which is an aid when changing from helical to straight teeth or from one helix angle to another.

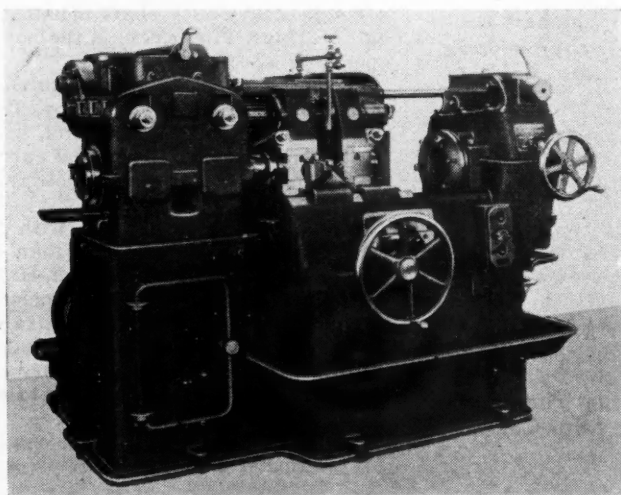
A new automatic in-feed or depth feed mechanism has been developed which automatically feeds the work towards the cutters in any desired increment per revolution of the work, and these increments may be uniform or variable as required. The depth of feed per revolution, or the total depth of cut, can be altered or regulated without stopping the machine.

This latest product of Farrel-Birmingham Co., Inc., Buffalo, N. Y., is said to be capable of generating any known type of herringbone gear, as well as straight tooth and single helical gears with external or internal teeth, splined shafts, cluster gears, sprockets, angle gears and other toothed forms and special contours.

50,000 R.P.M.

The Marlin-Rockwell Corporation, of Jamestown, N. Y., is exhibiting two types of bearings known as the M-R-C super-precision and M-R-C duplex. The first type is designed for use with high speed spindles, speeds up to 50,000 r.p.m. being permissible. The duplex-type bearing is recommended for heavy-duty service where a high preloading is desired to give rigidity.

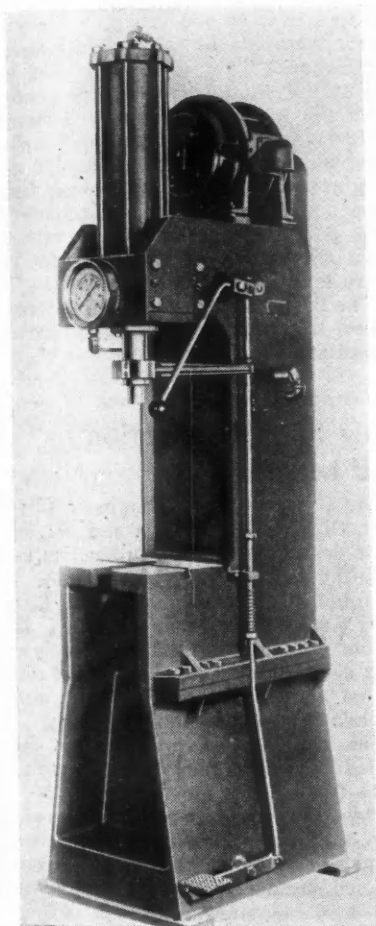
**Farrel-Sykes gear
generating machine**



Hydraulic Forcing Press

The Logan hydraulic forcing press is furnished in 1 to 5-ton sizes for bench mounting and in 10 to 50-ton capacity with unit frame construction, where the sub-base is part of the press frame. The press is of all-steel construction, and the ram which operates in a long bronze bearing at the lower end of the cylinder is made of high carbon steel, hardened and ground.

This recent product of The Logansport Machine Company, Logansport, Ind., is designed for assembly and forcing operations. An adjustable relief



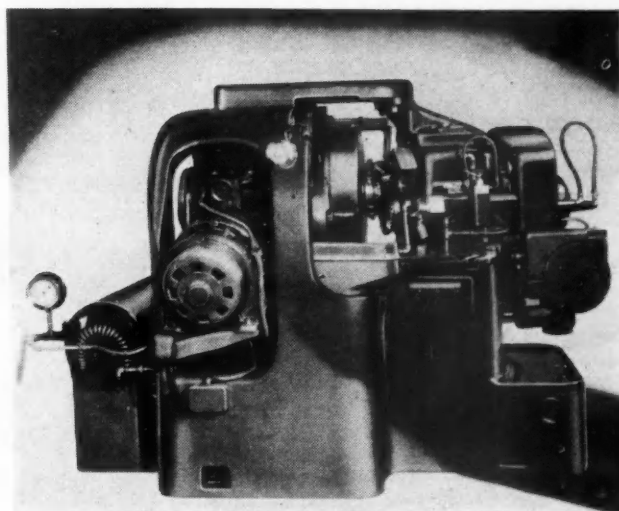
Logan hydraulic forcing press

valve provides a variable pressure up to the maximum of the machine. The press control is by either hand lever or foot pedal, release of either permitting the ram to return to its top position. Adjustable stops can be set to automatically regulate the stroke.

Single Cycle Gear Finishing Machine

The No. 11 single cycle gear finishing machine, product of the Gleason Works, Rochester, N. Y., is said to employ the fastest method yet devised for finish cutting spiral bevel and hypoid ring

Gleason Works are showing a new gear finishing machine



gears. As recently described in *Automotive Industries*, the gear to be finish-cut is previously rough-cut in the standard Gleason roughers, and then transferred to the new machine for finish cutting.

The face-mill finishing cutter used consists of two series of inserted blades. First there is a series of blades of progressively increasing depths which accurately shape and space the tooth by a succession of very light cuts. Then follows a series of finishing blades, each cutting the full depth, which finally size the whole profile of the tooth and produce the desired finish and accuracy of finish. The cutter and gear remain in normal full-depth operating position during the entire machine cycle, and provision is made for indexing by a gap in the cutter, which follows after the second series of blades. When this gap comes abreast the blank, the blank is indexed.

Chucking and dechucking operations have been facilitated by means of a power chucking and stripping mechanism, built into the work-spindle and controlled by a conveniently located lever. An automatic stop, which resets itself after each gear, functions to stop the machine when the last tooth is cut, eliminating any possibility of re-cutting.

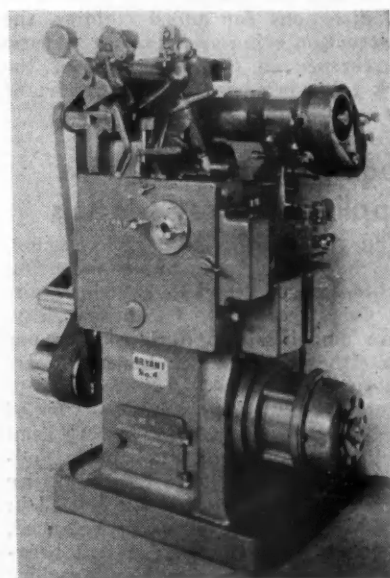
New Bryant Grinder With Automatic Sizing

The two new grinders known as No. 4 and No. 16, introduced by the Bryant Chucking Grinder Company of Springfield, Vt., are both equipped with an automatic sizing device which separates the wheel from the work when the desired size is reached after finish grinding, without any attention from the operator. The grinding cycle is divided into four stages or steps—chuck, rough grind, finish grind and dress wheel. The finish grinding can be adjusted at a slower rate of feed than the rough grinding if desired.

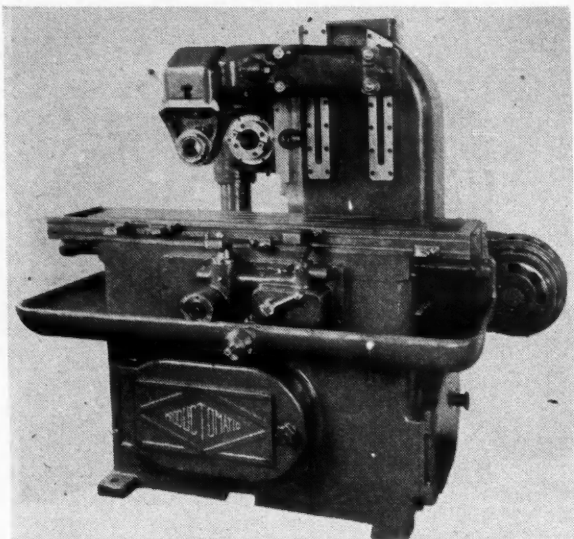
The No. 4 machine, illustrated, is

designed for grinding small diameter bores in bearing rings, bushings, rolls, gears, etc. Like other Bryant grinders this one has a suspended wheel slide, consisting of a wheel spindle support attached to an overhead cylindrical bar which both sides and turns, giving longitudinal traverse motion and also diameter control for the grinding wheel. Compressed air is used for carrying the wheel slide in and out of the working position and one lever controls the closing of the chuck and starting of the grinding cycle. The wheel slide is brought to rest, work rotation stopped and the chuck opened through cylinders working automatically.

The No. 16 grinder mentioned above has full hydraulic control, including the wheel slide traverse, the cross feed, the wheel truing device and the lifter for swinging the wheel slide into position for chucking and grinding.



No. 4 Bryant grinder has automatic sizing device



Producto-Matic
Miller

Producto-Matic Miller Just Announced

A manufacturing type of milling machine adapted for miscellaneous milling operations has just been announced by The Producto Machine Company of Bridgeport, Conn. A feature of this new No. 28 miller is the length and size of the work table, which permits long cuts. The range of table feed is from $\frac{7}{8}$ in. to $12\frac{1}{2}$ in. per min. for cutting, while a quick traversing mechanism returns the table at a speed of 300 in. per minute.

The cutter spindle bearing is said to be of unique design. It is mounted on a heavy column and is adjustable vertically on the face of this column to locate the cutters in relation to the work. The spindle is driven by a worm and worm gear.

The overhanging arm is secured in two directions for added rigidity, the construction being such that there is no interference on the outer end of the work table because of any support of this overhanging arm.

Precision Boring Machine Supplied in Three Models

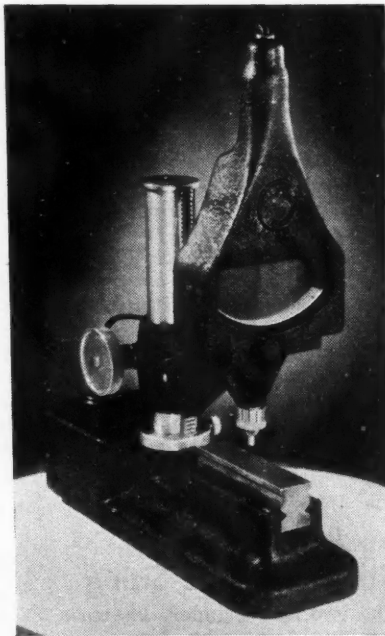
The Cimatoool Company, Dayton, Ohio, is producing its precision boring machine in three models, known as normal duty, universal, and heavy duty. These machines are designed for use with either diamond or cemented carbide cutting tools.

One of the distinguishing features of this boring machine is the boring head which is available in a number of standard and special sizes to meet varying requirements. The spindle is housed in a rigid casting, is dynamically balanced, and mounted on pre-loaded ball bearings. The head construction provides ample oil capacity to provide continuous lubrication of the spindle.

Hydraulic operation permits a wide range of table speeds as well as any

sequence of motions desired. Normally the table cycle starts with rapid advance, changes to a slower feed, has a short dwell to permit stopping of the spindle and then closes with a rapid return.

The Sheffield Gage Corporation, a division of the Cimatoool Company, is of-



Sheffield visual gage

fering a visual gage in two models, either of which can be used for measuring both inside and outside diameters. In the No. 1 gage a movement of .000025 inches in the upper gaging element results in moving the indicator on the illuminated dial $\frac{1}{8}$ in. The No. 3 model, illustrated, operates on a 1000 to 1 magnification.

Although electric current is used in

the operation of this instrument, the accuracy of measurement is said to be in no way affected by fluctuations in voltage or amperage, as the current is only used to project the beam of light which registers on the dial.

Bath Internal Micrometer Measures to .0001 Inch

John Bath & Co., Worcester, Mass., is exhibiting its line of internal micrometers which measure directly in tenths of thousandths of an inch the actual size of a hole. The sensitiveness of these instruments is said to be due to the fact that only a straight line contact is made by the jaws when measuring a hole. This is accomplished by having the micrometer fully contracted when the jaws are ground and lapped to form segments of a perfect circle, with the result that the instant the jaws are expanded they no longer form segments of a circle, but acquire a high point of contact which extends down the center of each jaw for its entire length.

The Bath Co. is also exhibiting thread gages, roll thread dies and ground thread taps.

New High Production Bolt Machine

The Oster-Williams Company, Cleveland, Ohio, is featuring a new bolt machine designed for high production, and handling all sizes from $\frac{1}{2}$ to $2\frac{1}{4}$ in. at spindle speeds ranging from 32 to 196 r.p.m. Furnished in both single and double spindle, the latter is equipped with a mechanical reverse on one spindle so that both right and left-hand threads can be cut simultaneously.

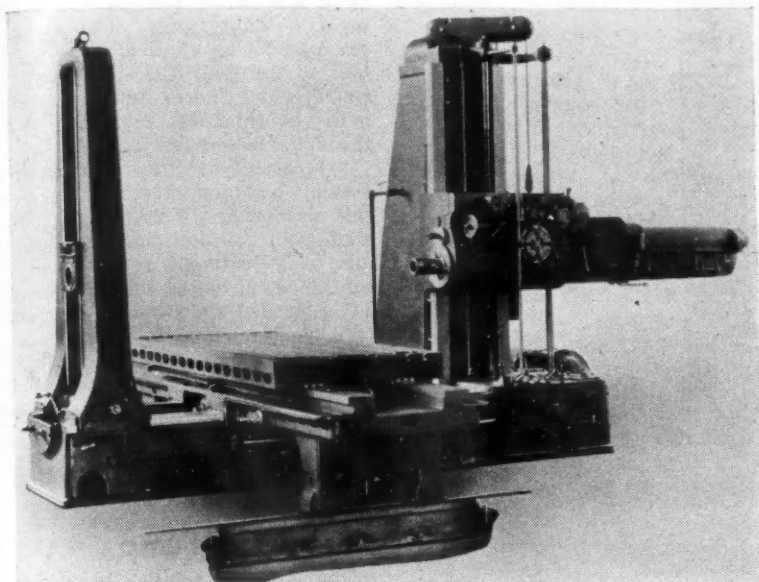
The spindles are mounted on pre-loaded tapered roller bearings adjustable for wear.

This company has also announced a new automatic pipe-cutting machine, using a cutting torch said to leave a finished surface resembling a lathe tool cut.

Light Weight Feature of Hannifin Portable Riveter

The Hannifin Manufacturing Company, Chicago, Ill., has developed a portable hydraulic riveter consisting of two units, an automatic hydraulic pressure generator and a portable yoke type hydraulic press, the latter weighing only 54 lb. and developing a maximum pressure of 35,000 lb. to the head of a rivet. The throat of the yoke is 6 x 6 inches, and the ram stroke is 3 inches.

The hydraulic pressure generator, driven by a 2-hp. motor, is a completely automatic power unit, with electrically actuated valves and oil pump control. The button located at the top of the press handle gives complete control of the entire operating cycle, including



Giddings & Lewis No. 350-T boring, drilling and milling machine

the necessary safety features. Pressure of the control button actuates the press as follows: First, rapid advance stroke at moderate pressure until the die touches the rivet; second, when the die makes contact with the rivet the generator automatically delivers high pressure; third, at the peak pressure the ram is automatically reversed, and returns to the starting position; fourth, at the end of the reverse stroke the control valves automatically move to neutral, and the oil pump unit idles at zero pressure until the next cycle is started.

Giddings & Lewis Miller Has Directional Control

"Directional Control" is the term applied to the arrangement of the various control levers on the new No. 350-T table-type horizontal boring, drilling and milling machine manufactured by Giddings & Lewis Machine Tool Co., Fond Du Lac, Wis. As a safety feature each lever can only be moved in its respective slot, and the various units such as headstock, saddle and table always move in the direction their respective control handles are actuated. All of these units may be started, stopped and reversed, singly or together, without regard to any of the others.

In order to take care of all classes of work two spindles are provided, the large main one, which operates at speeds up to 500 r.p.m., being used for boring and heavy milling, while high speed drilling, tapping and milling work is carried out on the small, light high speed spindle which can be reversed at speeds up to 1500 r.p.m. Both spindles are mounted on precision anti-friction bearings.

The feed selector lever has two positions, one engaging the feed to the main

spindle and the other to the high-speed spindle, a safety provision making it impossible to engage both at once. Various combinations of the selective levers provide 36 separate spindle speeds and 18 independent feeds. For the cutting of keyways and other work requiring a reciprocating motion of the spindle, without rotation, provision is made for declutching the main spindle while the feed is still engaged.

New Line of Contour-Measuring Projectors

The Bausch & Lomb Optical Company, Rochester, N. Y., is exhibiting at the show two new contour measuring projectors claimed to possess great efficiency and versatility in the examination and inspection of mechanical parts. Among the new features is a light source consisting of a new incandescent lamp said to have very long life and requiring practically no attention.

The small projector is provided with a vertical translucent screen upon which the outline of an object may be traced, and an opaque, horizontal screen upon which paper or original drawings may be attached. In the larger machine the work table, which is horizontal, is moved vertically for focusing by an automatically operated focusing device.

Other instruments being exhibited include a shop microscope, an optical drill gage, optical comparator, optical glass thickness gage and a metallurgical microscope.

Ahlberg Has Developed Line of Pillow Blocks

Available in the unit type for medium duty, and in the ball and socket type for heavy duty, the new line of

CJB pillow blocks introduced by the Ahlberg Bearing Company of Chicago, Ill., is designed to cover all types of service. All bearings are fitted with felt seals to prevent the entrance of foreign matter and to retain lubricant.

The ball and socket type housing permits the use of heavy duty, double row ball bearings and includes features said to compensate for variations in the alignment of the base and shafting. A unique method of drawing the bearing onto the adapter is claimed to prevent overload of the bearing due to too much take-up, yet due to the wrapping action of the adapter around the shaft, the possibility of slippage is eliminated.

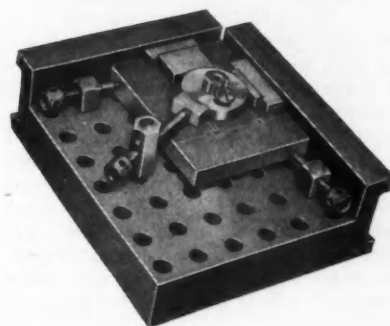
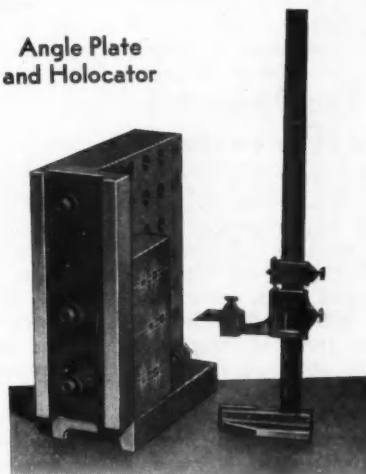
Where the shafting is held to close tolerances, the medium duty straight bore type pillow block which provides for mounting directly on the shaft, is used.

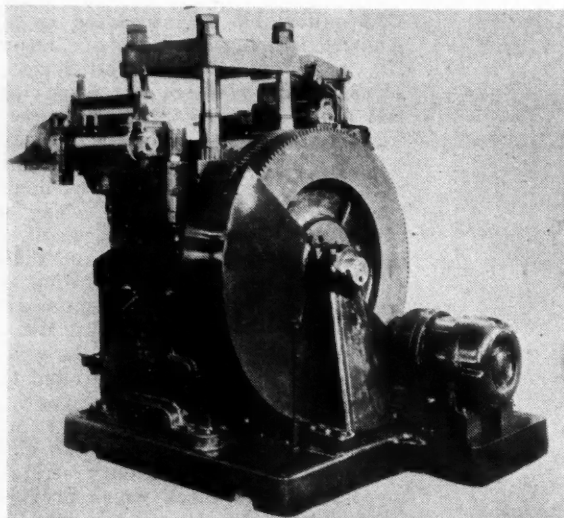
New Device for Laying Out, Checking and Drilling Dies

The laying out and drilling of dies and drill jigs is said to be greatly speeded up with the new "Angle Plate and Holocator," just introduced by Dayton Rogers Manufacturing Company, of Minneapolis, Minn. By means of the adjustable gaging blocks holes can be accurately located, and standard drill bushings are supplied for 1/16, 1/8, 3/16, 1/4, 5/8 and 1/2-in. drills.

As illustrated, this tool can be used not only in a horizontal position but also in a vertical position, due to the angle plate construction. This feature makes possible the use of a vernier height gage for cross-checking the work.

Angle Plate and Holocator





Henry & Wright
Mfg. Co. 50-ton
dieing machine

J-Metal for High Speed Cutting Tools

The Haynes Stellite Company of New York City recommends J-metal, the new improved grade of Haynes stellite for high-speed cutting tools. Without shortening the tool life, it is said to be possible to operate machines 50 per cent faster with this new material.

J-metal is a non-ferrous alloy of cobalt, chromium and tungsten, said to possess the ability to remain hard even at a red heat, making it suitable for tool bits, milling cutter blades, welded tip tools, etc. Several machine tool builders at the show are exhibiting their machines tooled up with this new product.

50 Ton Dieing Machine Has New Features

The Henry & Wright Manufacturing Co. of Hartford, Conn., has added many improvements to its 50-ton dieing machine illustrated. This automatic high speed power press which is equipped with automatic double roll feed, arranged with direct connected motor drive, is designed to produce intricate stamped metal parts complete at each stroke.

Differing from many presses where the punch carrying member is pushed downward from above, in this machine the upper crosshead, which carries the punch, is pulled downward by four steel rods fastened at their lower end to a ram guided in the lower base of the machine. The angular thrust of the crankshaft is taken by this ram, and the four rods are guided at the die bed by adjustable taper bushings.

An 80-ton automatic feed high speed steel press, No. 204½-38, has also been recently introduced. Of welded steel construction this press is said to possess ample rigidity even in the event of overload. It is designed for the pro-

duction of intricate stampings from progressive dies, with the press operated at high speed.

Capable of handling coils up to 500 lbs. in weight, the new automatic motor driven cradle type stock reel, also recently announced, is said to require no attention from the machine operator. Geared motor drive is provided, the motor being controlled by a mercury switch actuated by a balanced arm resting upon the material between the coil and roll feed of the press. This control stops the motor before sufficient material is fed to touch the floor, and starts the motor again before the material is pulled tight by the press.

Cemented Carbide Tools for High Speed Cutting

The Carboloy Company, Detroit, Mich., is exhibiting at the show representative types of Carboloy tools, including diamond-impregnated tools for the finish and semi-finish dressing of grinding wheels.

Carboloy cutting tools are claimed to give great accuracy and good finish, while at the same time permitting high cutting speeds and the machining of very hard materials. The amount of surplus material necessary for machining can also be reduced through their use.

Many of the companies exhibiting at the show are featuring Carboloy tool demonstrations.

Quick Readings with Dwarf Brinell Press

The new portable hardness tester, type M 60/750, recently announced by the R. Y. Ferner Co., Boston, Mass., can be used in an ordinary vise or C clamp as well as in an arbor press, since the exact amount of pressure can easily be read on the dial indicator with which it is equipped. Three sizes of ball penetrators, 2.5 mm., 5 mm. and

10 mm. are supplied, giving the instrument a wide range. The amount of pressure to be applied and the size of ball to be used are designated by a chart which takes into consideration both the thickness and the nature of the metal being tested.

"Durostat" is the name given to a second hardness tester marketed by this company. Weighing only 3 oz., similar in size and shape to a fountain pen, this instrument is entirely self-contained, no equipment or accessories being needed for its proper operation. It consists primarily of a glass tube inclosing a small piece of glass-hard steel which, when released, drops on the specimen being tested and the rebound indicates the hardness.

Self-Priming Centrifugal Pump

The Acme Machine Products Company, of Muncie, Ind., has introduced a new line of Acme sure-flow pumps. Designed to handle water, oil, coolant or fluids filled with abrasive, this centrifugal pump will maintain a prime even though not submerged in the liquid, and so can be installed at any convenient location on a machine with



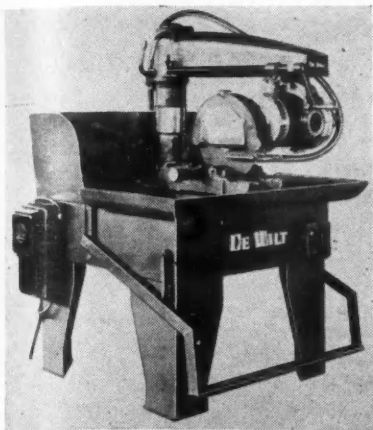
Acme pump is self priming

a single pipe connection to the fluid reservoir.

Belt-drive models are available in 4, 10, 20, 50 and 100-gal. per min. capacities. The four largest sizes are also furnished with direct electric motor drive. All models are manufactured for both low and high-pressure duty.

Cutting Machine Will Cut at Any Angle

DeWalt Products Corporation, Lancaster, Pa., has introduced a machine designed to meet the needs of tool rooms and shops handling a variety of metals such as steel, aluminum, copper or brass where exact cutting is necessary to meet the requirements. This metal cutting machine utilizes the overhead principle, cutting with saw blades or abrasive wheels driven either directly from the motor shaft or through a back gear, permitting two speeds.



De Walt metal cutting machine uses saw blades or abrasive wheels

Available in different sizes, with motors up to 20 hp., this machine will cut steel tubes up to $\frac{1}{2}$ in. wall with saw blades, and will cut high carbon steel up to 3 in. thick with abrasive wheels. Since the wheel travels parallel to the table above the work, cuts up to 24 in. in width can be handled.

The vise which holds the work is furnished in three types: foot operated, hand operated or air controlled. The machine can be arranged either for hand feeding of the cutter to the material, or with automatic air feed.

Designed along similar lines, the new DeWalt woodworking machine, built in four types ranging from $\frac{1}{4}$ to 15 hp., is said to be capable of performing 29 distinct operations. It will handle lumber from the smallest size up to 16 in. in thickness.

High Speeds and Heavy Cuts with New Cutting Tools

Thomas Prosser & Son, New York City, are exhibiting at the show "Widia XX" cemented carbide, a newly developed material capable of high cutting speeds. When used on S.A.E. 1020 steel a speed of 1200 to 1500 ft. per min. is permitted. For heavy cuts on steel, "Widia X" can be used at 650 to 1000 ft. per min.

Newly developed tool grinders which make possible the grinding of cemented carbide tools to a fine cutting edge and correct angles in the minimum time will be shown. It is claimed that with these grinders any simple tool up to $1\frac{1}{4}$ in. square can be reground in a few minutes.

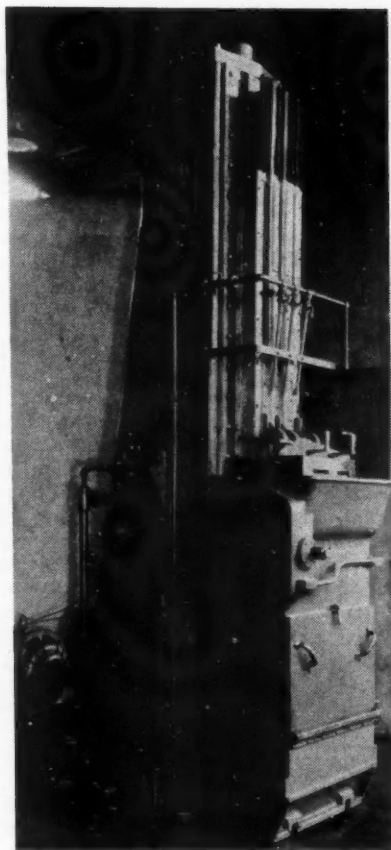
Broaching Machine Speeds Production

Two recent applications of surface broaching by the American Broach & Machine Co., Ann Arbor, Mich., are described here. The illustration shows the new 52-in. stroke vertical surface broaching machine tooled up, broaching three parts at a time—two straight shifter forks and one offset fork. Pro-

duction is six pieces per minute, which is said to be four times the production rate by milling.

This machine is of 35-ton capacity and is equipped with variable speed control with a maximum of 30 fpm. The set-up is arranged with a tilting table operated by push button. In operation, after loading the fixture, the push button control causes the fixture to rock into cutting position. The broaches move down and, upon completion of the stroke, the fixture opens automatically, permitting the operator to load and unload during the upward stroke.

The broach holder is arranged to receive three sets of built-up broaches with means for adjustment. Broaches are so designed as to provide ample chip clearance by the expedient of ar-



American Broach & Machine Co. 52-in. stroke surface broaching machine

-ranging the cut so that first the end surface is finished, then the sides.

A second machine, SB-18-4, is a small model having 18-in. stroke and 4-ton capacity. It has variable speed control with a maximum rate of 36 fpm. The machine is electrically controlled and direct motor driven.

This machine can be tooled with an automatic tilting fixture for broaching several parts at the same time. Broach holders are adjustable and said to be easily removed for changeover.

Oil Proof Vee Belts for Machine Tool Drives

"Daycoil" is the name given by the Dayton Rubber Manufacturing Company, Dayton, Ohio, to its new Vee belt for machine tool drive. Of conventional laminated construction, this belt has a specially designed casing of a new synthetic compound developed to resist oil. This new compound, called "Dayco," is said to have all the properties of natural rubber, such as flexibility, plasticity and resiliency, and much greater abrasive and wearing qualities than rubber when subjected to oils and solvents.

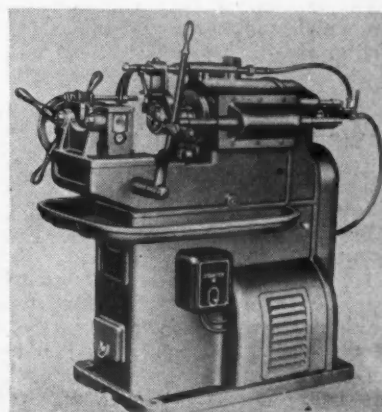
The manufacturers state that this new product has been subjected to exhaustive tests which indicate that it has a long life, due to its oil-resisting qualities, and should effect a saving in belt maintenance.

Geometric Threading Machine

Where large quantities of very accurate duplicate parts are required, The Geometric Tool Co., New Haven, Conn., recommends its new No. 12 threading machine. This is a hand operated machine, suitable for general purpose threading work, and is equipped with ball and roller bearings, direct and positive control, and an accessible quick change mechanism. It can be supplied either with or without a lead screw.

To speed up production the Geometric combination die head has chaser holders that can be quickly removed, reground and reset without removing the head from the machine or disturbing the set-up. Either tangent or circular type chasers can be used.

As a substitute for solid dies, the new style EJ solid adjustable die head is designed for use on single spindle automatics or similar machines turning out large quantities of small size work. Built in only one size, namely $\frac{1}{4}$ in., this tool can be adjusted to produce threads from the smallest diameter up to $\frac{1}{4}$ in.



Geometric threading machine

New Blanchard Grinder Faster

The Blanchard Machine Company, Cambridge, Mass., announces the addition of the No. 18 surface grinder to its line of grinding machines. It carries an 18 in. x 5 in. x 15 in. grinding wheel and a magnetic chuck of 26, 30 or 36 in. in diameter. This one piece steel chuck is driven through a sliding gear box giving six speeds from 6 to 33 r.p.m., from a direct connected motor which is started and stopped by push button control, eliminating a clutch.

The feed hand wheel, which makes one turn for .025 in. feed, has in back of it a dial which makes one turn for .100 in. feed. This dial can be set to automatically trip at any amount of down feed less than .100 in.

The power traverse of the table is driven by a motor on the back of the base and is automatically stopped at each end of the travel. The inner table stop is easily adjustable to stop the table at any desired point for grinding work that has a hub.

The new type water guards, opening at the front, are said to afford increased safety as well as to effectively confine all splash and spray. Individual motor drives are provided for raising and lowering the head, and for the water pump, in addition to the table traverse, and the chuck already mentioned.

New Heavy Duty Welders Announced

An improved line of heavy-duty welders is announced by the Harnischfeger Corporation of Milwaukee, Wis. The most important changes include a new two-bearing armature shaft, removable ball-bearing capsules, simplified current control, and a heavy duty built-in polarity switch.

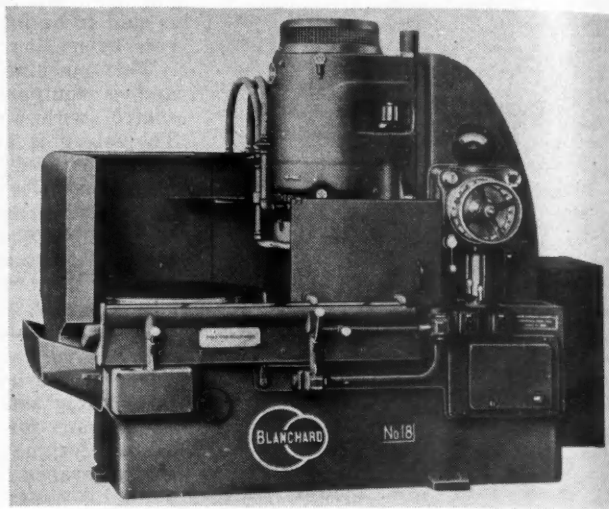
As in previous P & H Hanson generators the internal stabilizer coils are embedded in the main pole tips. The motor has a solid cast frame with a top opening for terminal leads and mounting of the magnetic switch-type starter. Between the motor and generator is located the large aluminum fan which supplies a constant flow of cooling air.

Power Press Run from Electric Light Socket

Equipped with a $\frac{3}{4}$ -hp. motor, the No. 128 Whitney heavy-duty punch can be run from a standard electric light socket if desired. Of welded box-type design, built of steel plates, the frame is said to have a very high factor of safety. The motor has a gear reduction of 3 to 1 and drives through double "V" belts to the flywheel which is placed at the rear of the machine.

This latest product of the Whitney Metal Tool Co., Rockford, Ill., has a

Blanchard Machine Co. No. 18 surface grinder



1 $\frac{1}{4}$ -in. stroke and an 8-in. throat depth, and is equipped with an adjustable brakeshoe on the main shaft, as well as a safety device to prevent the ram from descending when changing punches and dies.

New Features on Hydraulic Press

The 1500-ton press illustrated is typical of the line being produced by the Hydraulic Press Mfg. Co., Mount Gilead, Ohio. Automatic operation is accomplished by the aid of the hydroelectric control, which provides a push-button start, automatic pressure reversal, instantaneous emergency reversal, and other features. When set for semi-automatic operation, the press ram stops at the initial position at the end of each cycle, while with full auto-

matic operation the same cycle is repeated, restarting each time automatically. Change from one mode of operation to another is effected by the turn of an electric switch.

The hydraulic circuit of the press provides for direct connections between the source of pressure, the radial pump, and the press cylinders without intervening valves. All press movements are controlled by means of the pump itself which is of the high speed, rotary, radial plunger type with variable, reversible stroke. A safety control is provided that will automatically place the radial pump in neutral in case of any power failure, thereby preventing the press from dropping unexpectedly.

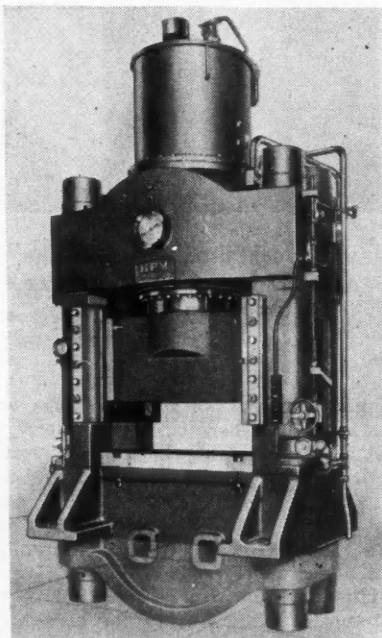
Rapid advance and return of the ram are provided by "fastraverse" control, with a "floating poppet" surge valve between the overhead oil supply tank and the main cylinder. Another feature of this control is the decompressing of the oil in the main cylinder, immediately following the attainment of peak pressure, thereby permitting a quick reversal of the press without shock.

New High-Speed Cutting Tools

As an addition to its line of high-speed cutting tools, the Vanadium-Alloys Steel Co., Latrobe, Pa., has recently put on the market two new products, known as Vascoloy-Ramet Cemented Carbide and E.V.M. High Speed Steel.

Vascoloy-Ramet is composed chiefly of tantalum carbide, and according to the manufacturers, due to its high break strength, low coefficient of friction and non-cratering properties, is suitable for cutting steel having a hardness as high as 500 Brinell.

E.V.M. is a super high-speed steel, suitable for cutting hard material, abrasive material, or at high speeds, or any combination of these three. It is said to be equally efficient for roughing or finishing work.



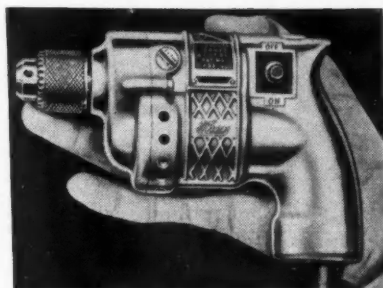
Hydraulic Press Mfg. Co. 1500-ton press

New Drill and Sander Added to Black & Decker Line

The Black & Decker Mfg. Co., of Towson, Md., has added a ¼-in. Junior drill and a 7-in. sander to its present line of tools. The drill has a universal motor mounted on oilless bearings, and controlled by a slide switch located on top of the easy-grip handle. The aluminum castings used on this tool are rounded for easier handling and are designed to stand hard knocks.

The sander, which is intended for heavy-duty sanding and metal finishing on a production basis, is said to have an extra sturdy gear construction housed in a rugged case to withstand rough handling. The commutator and switch compartments are sealed against abrasive dust and dirt.

This company is also exhibiting additions to its line of high-cycle screwdrivers, nut runners and grinders.



Thor light weight drill

under severe load. Helical gears together with ball-bearing mountings are claimed to largely eliminate noise and vibration. The machine is equipped with a Jacobs chuck.

New Century Electric Motors

Built in sizes up to 600 hp., the recently announced line of Century squirrel-cage motors is especially designed for modern applications. The Century Electric Co. of St. Louis, Mo., claims for its new motors great mechanical stability due to the cast frame and end brackets, as well as the large shafts and bearings and well-anchored field and rotor cores. Corresponding electrical ruggedness is said to be provided through the use of electrolytic copper bars and end rings so joined as to form a homogeneous high conducting joint.

These motors are available in either sleeve or ball-bearing designs.

Cleaning Parts with Blakeslee Degreasers

To prepare metal parts for plating, shellacing, varnishing, etc., G. S. Blakeslee & Co., of Chicago, Ill., is manufacturing degreasing machines made for either hand-dip or automatic conveyor-type operation. Steam, gas or

electricity may be used for heating the solution, loss of which is prevented by the use of condensing coils. The machine is equipped with a complete distilling apparatus for purification of the solvent.

The cleaning fluid used is known as "Blacosolv," a chlorinated, non-inflammable solvent, which it is claimed will not attack any of the metals being cleaned nor tarnish polished surfaces. It is heavier than water and boils at a lower temperature.

In addition to the degreasers, this company has on the market a complete line of Niagara parts washing machines which use an alkali solution.

Monarch Presents Several New Lathes

One of the most recent products of the Monarch Machine Tool Company, Sidney, Ohio, is the 12 x 18-in. simplified manufacturing type lathe equipped for semi-automatic production. A 5-hp. motor is standard equipment, but a larger size can be used if desired.

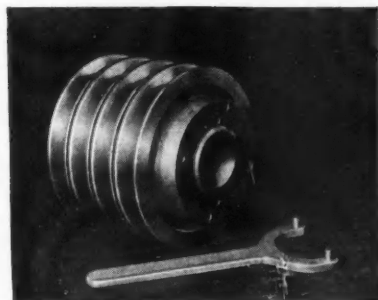
Two other recent additions to the Monarch line include the 16 x 30-in. Model W lathe equipped with a 7½-hp. motor, and the 30 x 60-in. Model NN heavy-duty lathe equipped with helical gears and roller bearings throughout. Sixteen spindle speeds are provided on this lathe.

The Monarch Model BB shaft-turning lathe employs a speed transmission unit inside the headstock leg giving a wide range of spindle speeds. This lathe has been developed solely with the idea of handling the modern cemented carbide tools, spindle speeds as high as 2000 r.p.m. being permitted.

Other recent developments include a cam lock, for quickly clamping chucks, plates, and fixtures to the flanged spindle nose; and the new diameter and length-gaging dials which are said to eliminate "cut and try" methods in lathe production.

Texrope Drive Shown By Allis-Chalmers

The exhibit of the Allis-Chalmers Co., Milwaukee, Wis., includes a demonstration of its new vari-pitch sheave used with variable speed Texrope drives.



Allis Chalmers Co. vari-pitch sheave

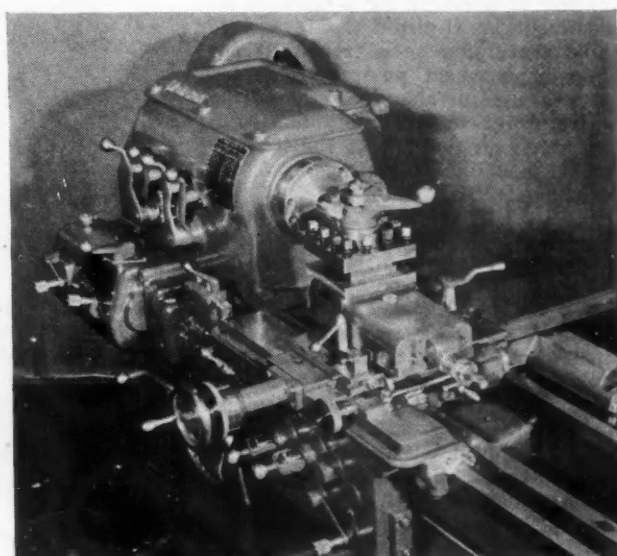
These sheaves have a pitch diameter adjustment to vary the speed 15 to 25 per cent with one sheave, or double that amount with two. These sheaves are made in two multi-groove types, one adjustable when the drive is stationary, and the other for speed control with the sheaves in action.

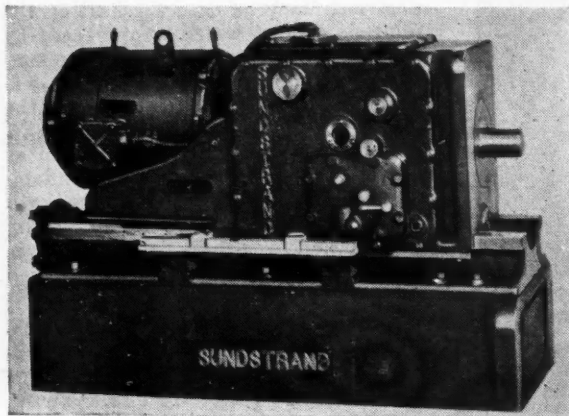
Light Weight Thor Drill

Weighing only 2½ lb., and with an overall length of 6¼ in., this smallest Thor drill ever built is intended for one-hand operation. A product of the Independent Pneumatic Tool Company, Chicago, Ill., it is made in two sizes, 3/16 and ¼ in., the former having a free speed of 3750 r.p.m. and the latter a speed of 2500 r.p.m.

Model U14, as this new drill is designated, features a hand-wound armature and a specially constructed commutator as well as a ventilating system said to effectually cool the motor even

18 in. Model BB lathe shown by the Monarch Machine Tool Co.





Sundstrand sliding head drill unit

High-Speed Miller For Small Parts

The new Sundstrand No. 2 automatic Electromil is designed to give low cost production on parts manufactured in small quantities. Manufactured by Sundstrand Machine Tool Co., Rockford, Ill., this miller features an electrical system of table control, consisting of a waterproof control box on the front of the machine, actuated by adjustable dogs on the table, and a panel in a compartment at the rear, where all electrical connections are centralized. This system of control is claimed to be practically instantaneous in operation, yet smooth and shockless. It is also said to possess flexibility, permitting any combination of table cycles within the capacity of the machine to be quickly secured.

With a quick-change feed box a total of 24 feeds are available, ranging from $\frac{1}{4}$ in. to 48 in. per minute, and with a quick-change spindle head 24 speeds ranging from 42 to 1286 r.p.m. are provided.

The Sundstrand sliding-head drill unit, illustrated, is another recent development suitable for boring, drilling, reaming, spot facing, milling and similar operations. Hydraulic power for feeding is provided by a variable-displacement multi-piston pump, and for rapid traversing by a "rota-roll" constant-displacement pump. Both feed rates are adjustable throughout their entire range by the manipulation of two knobs on the side of the head.

This machine is furnished in 5, 7½, 10, 15 and 20-hp. sizes.

Wesson Has Double End Diamond Grinding Machine

The Wesson Company of Detroit, Mich., has placed on the market a double-end, self-contained, cemented carbide or diamond grinding machine. It is operated by a $\frac{1}{4}$ -hp. reversible motor, equipped with a safety switch which makes it impossible to reverse the motor while it is in motion. The table which slides in and out also has a safety device which prevents it from

being pushed against the wheel with possible damage.

The spindle of this grinding machine is mounted on ball bearings in such a way that the removal of three screws at either end of the head permits the entire spindle unit to be withdrawn.

In connection with the grinding of cemented carbide tools, the Wesson Co. is also producing a grinding vise, plainly indexed three ways, and provided with a positive locking device. It is said to be very rigid in order to eliminate the possibility of vibration.

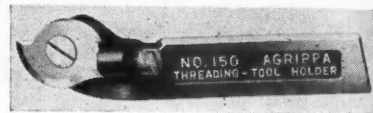
Another recent product is a boring bar for multi-dimension boring. These bars are furnished in a range of sizes and with any number of blades.

New Threading-Tool Holder Added to Williams Line

J. H. Williams & Co., 75 Spring Street, New York City, has introduced a threading-tool holder with a formed cutter as illustrated. It is said that this high-speed cutter assures threads that fit perfectly, since in resharpener the cutter it is necessary to grind the top

edge only, as the point retains the proper form and angle as originally supplied. This tool is ground to an included angle of 60 deg. and is backed off for proper clearance. A hardened set screw bearing against the rear flat edge, which is eccentrically formed, provides positive adjustment.

Especially adapted for use where fire hazards exist, the new Williams non-sparking safety wrenches are now being supplied. Drop forged from beryllium-copper, they are claimed to be practically as strong as steel wrenches of similar design and size.



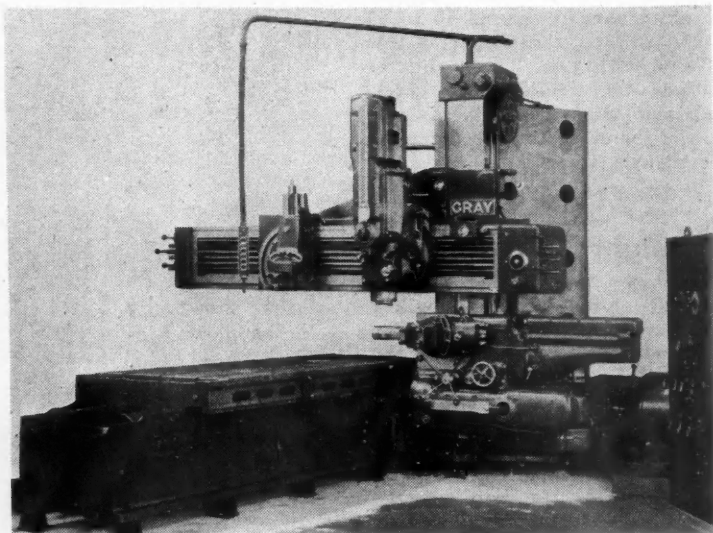
J. H. Williams & Co. offers new threading-tool holder

Planer Quickly Changed to Miller

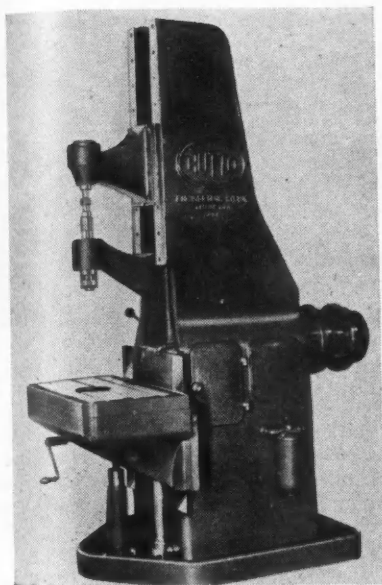
"It planes and mills, it bores and drills" is the way The G. A. Gray Co., Cincinnati, Ohio, describes its new milling planer, as any of these operations can be performed without changing the setting of the job. It is built both in the openside and double housing types, with any number and combination of milling or planing heads.

The table which is driven by helical gears is always rigidly supported, as it never overhangs the bed, being only half its length. Provision is made for quickly clamping the table to the bed, when accurate boring, drilling or cross milling is being done.

The milling heads are individual units, each driven by its own motor, which permits running two or more heads at different speeds at the same time. This construction is not only



G. A. Gray Co. shows a convertible miller-planer



Hutto has new honing machine

chanically actuated through a crank, and its speeds are infinitely variable through the adjustment of a feed-control valve, and it is said to be possible to secure any desired spindle stroking action without shock due to the deceleration and acceleration automatically produced at the extremities of the stroke. When desired, adjustments are provided to permit dwell in the stroke at either end, which is desirable in honing blind end bores.

This machine is equipped with a mechanical lift-out, hydraulically actuated, for withdrawing the hone from and inserting it into the bore. The lift-out-stroke is adjustable.

A new feature recently incorporated in the finishing hones produced by this company is the adjustment for expanding the fibre guides separately and independently of the stone adjusting mechanism. This improvement is said to greatly increase the life of these fibre guides, resulting in a saving in both material and labor.

rugged, but is claimed to be of great advantage when different size cutters are used, as each one can be run at its proper speed. The milling heads are built in sizes ranging from $7\frac{1}{2}$ to 50 horsepower, with each motor mounted concentric with the spindle and driving through planetary gearing, arranged to provide 18 spindle speeds in geometric progression ranging from 10 to 500 r.p.m. The speeds are changed at the head itself by turning a crank, while the direction of rotation of any spindle is controlled by a switch on the control panel.

Automatic feed control is available on the milling planer if desired. This regulates the feed to maintain a constant horsepower input into any spindle regardless of varying depths or widths of cut or hardness of material. The feed control not only controls the amount of feed, but also gives a visual indication of the horsepower input of any of the milling heads.

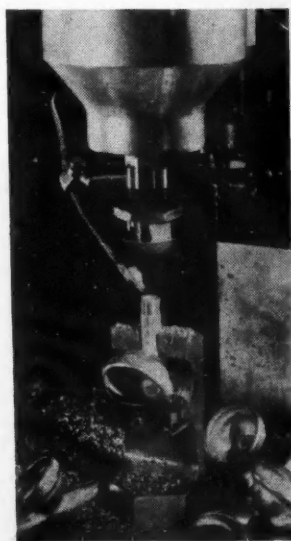
New Honing Machine Has Mechanical Drive

The single-spindle honing machine illustrated is the latest product of the Hutto Machine Division of The Carborundum Company of Detroit, Mich. The mechanical rotation drive, which is hydraulically controlled, is designed to supply a complete speed range by means of a variable speed "V"-belt mechanism. Through the shifting of a speed-change lever on the gear case at the head of the machine, overdrive speeds within a given range are obtainable in whatever increments are desired.

The reciprocating mechanism, although hydraulically powered, is me-

Haskins Tapper Used For External Threading

Either tapping or external threading can be done at high speed on the No. 2 Haskins tapping machine, product of R. G. Haskins Co., Chicago, Ill. A special feature is the tap head, consisting of three parts, an upper unit which carries the driving bell, a center unit which is the housing supporting and holding the reverse mechanism, and the reverse driving unit. The upper unit fits into the motor housing and carries the driving shell and the gear for changing speeds. Precision ball bearings are used throughout the tap head and on the main drive spindle that carries the tap. Effort has been made to insure absolute rigidity of these



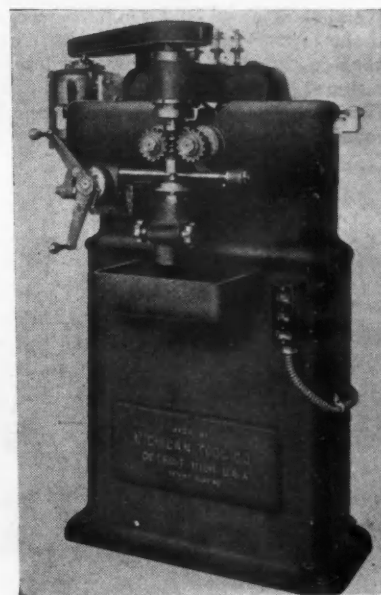
Threading with acorn die on Haskins tapping machine

parts so that float in either the tap head or spindle would be impossible.

To reduce the effect of weight and inertia on the tap a light-weight collet is used, together with a light clutch made of cork composition on an aluminum hub. A foot-pedal controls the feed, provision being made to prevent any damage from excess pressure.

Michigan Tool Gear Worm Lapper

A lapping machine for finishing steering gear worms has been introduced by the Michigan Tool Co., Detroit, Mich., designed to take care of the complete range of steering worms, including both straight and hour-glass types. Features of this machine include automatic timing, variable for each side of the thread; adjustable center distances, allowing recutting of laps; two lap spindles with an ad-



Michigan Tool Co. steering gear worm lapper

justable hydraulic brake on each, and work running on centers, eliminating adapters.

The cycle of operation is adjusted by means of automatic cut-out relays mounted on the rear of the machine. A push button starts the $\frac{1}{4}$ -hp. motor, which drives the worm through a belt for whatever length of time the relay is set. When the second relay cuts in, cutting out the first, the motor is reversed and the lapping action takes place on the opposite side of the worm thread. Adjustment of the braking pressure provides a control on the amount of lapping action per revolution of the work.

J & L Turret Lathe

Jones & Lamson Machine Co., Springfield, Vt., has a new line of saddle-type turret lathes, built in 2½-in. bar capacity and fitted with 12-in. chucks, when used for chuck work. Single-lever speed and feed selectors with direct reading dials are provided. Twelve spindle speeds, forward and reverse, are obtained through sliding gears mounted on multiple-splined shafts.

The universal carriage is equipped with a heavy-duty slide for mounting of tools on the front and back. The apron is equipped with a sliding-gear transmission providing nine variable feeds, ranging from 0.005 to 0.100 inch on the longitudinal travel and from 0.0025 to 0.050 inch on the cross-travel per revolution of the spindle.

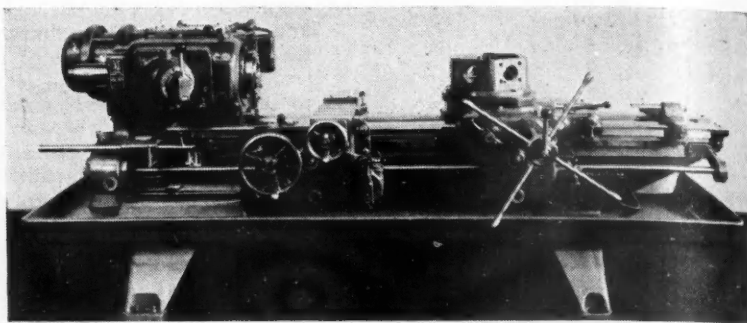
This new J & L lathe is fitted with a six-station, hollow, hexagon turret located with a large taper locking pin and held in position with an automatic clamp ring. The saddle on which the turret is mounted is equipped with a power traverse arranged to provide for two speeds in both directions. The higher speed is used for the longer travels, such as to and from the work, and the low speed is used for short approach to the work and power indexing the turret. The speed is automatically reduced on the return stroke when it reaches the indexing position.

The Pratt & Whitney Company, Hartford, Conn., makers of this machine, have incorporated an interesting method of locating, boring and checking holes in the work, through the use of inside micrometers and dial indicators located in two slides built into the table at right angles to each other. In boring a series of holes, the first hole is located and the two dial indicators are set to zero reading. The next hole can then be located from the drawing by inserting the proper measuring rods and moving the table until the indicators again read zero. It is claimed that this method of locating, because of its accuracy, makes possible the elimination of jigs in many cases.

The table is traversed rapidly in both

directions by double-threaded screws operated by handwheels on the front and side of the machine. These traversing screws are in no sense lead screws, and have no connection with the measuring instruments.

Other new products of this company include the Model C toolroom lathe, the 14-in. hydraulic vertical surface grinder, gear grinders for spur and helical gears, and two die-sinking machines.



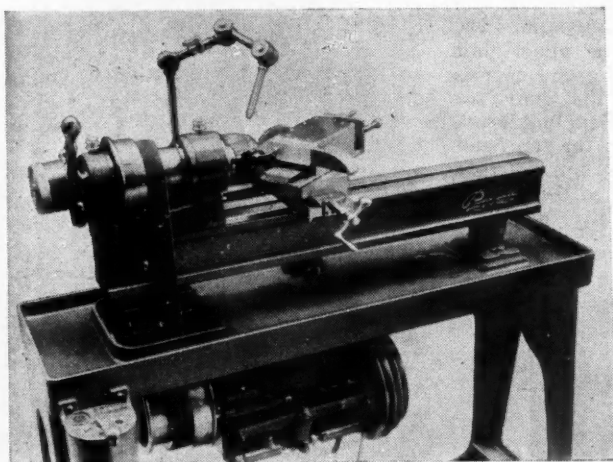
Jones & Lamson turret lathe

Rivett Open-Head Lathe

The Rivett open-head lathe, Model 505, is the product of Rivett Lathe & Grinder Corporation, Boston, Mass. Mounted on ball bearings, with a flat belt drive, the spindle has 18 speeds, both forward and reverse, with a maximum speed of 4600 r.p.m. available.

A recent development is the universal automatic slide rest, designed as a high production attachment. By depressing the operating lever in front the tool comes up into position, the angle of cut having been previously set, and the unit motor, through quick-change gears, automatically advances the top slide. At the end of the cut the tool automatically drops down and away from the work, ready to start another cycle.

The 505 lathe is equipped with a roller-bearing lever chuck closer and with an automatic brake and latch foot-treadle control.

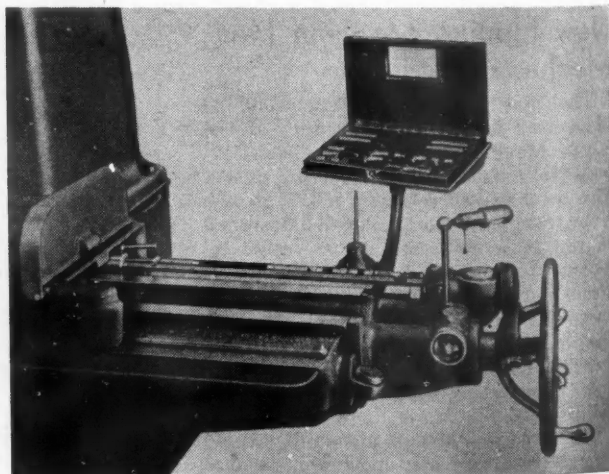


Measuring instruments on Pratt & Whitney jig head lathe

New Jig Borer Speeds Production

New features of the Pratt & Whitney No. 2A jig borer include 12 spindle speeds ranging from 37 to 1800 r.p.m. and eight spindle feeds in either direction ranging from 0.0005 to 0.010 in. for each spindle speed. The spindle quill has a maximum travel of 9 in., and graduations on the front of the quill together with a depth dial indicator and positive screw stop provide for accurate depth boring.

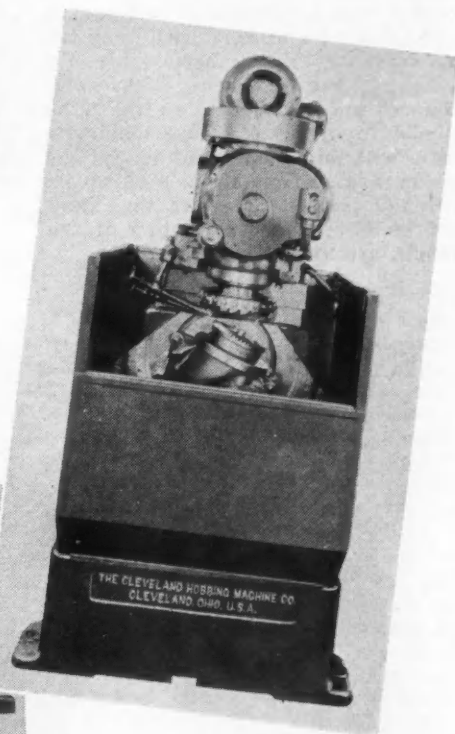
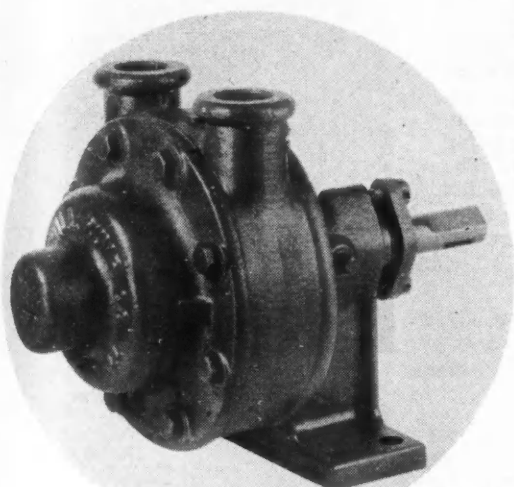
Measuring instruments on Pratt & Whitney jig borer



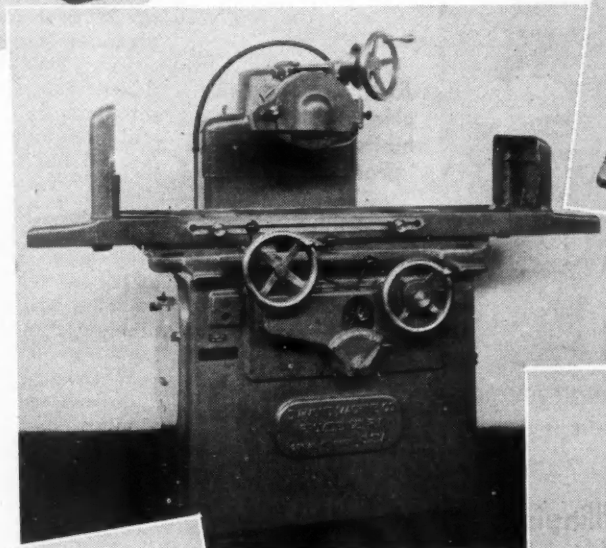
New Developments in Production Equipment

(Left)—The Tuthill Pump Co., Chicago, Ill., is manufacturing a model RC pump, having a capacity of $\frac{1}{2}$ to 50 gallons up to 100 lbs. this pump is said to be unique in that, without the use of valves, it will discharge from the same port regardless of the direction of shaft rotation

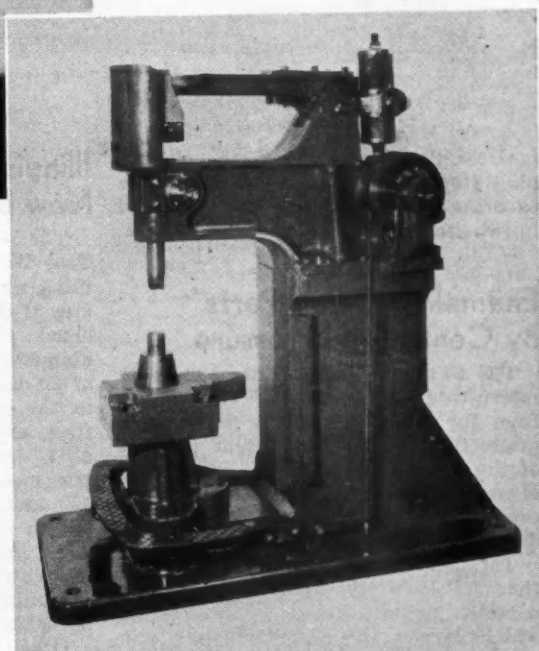
(Right)—The Cleveland Hobbing Machine Company, Cleveland, Ohio, is introducing the Spiral Bevel Rigidhobber, illustrated. This new machine hobs a spiral bevel ring gear in one continuous cut without intermittent indexing



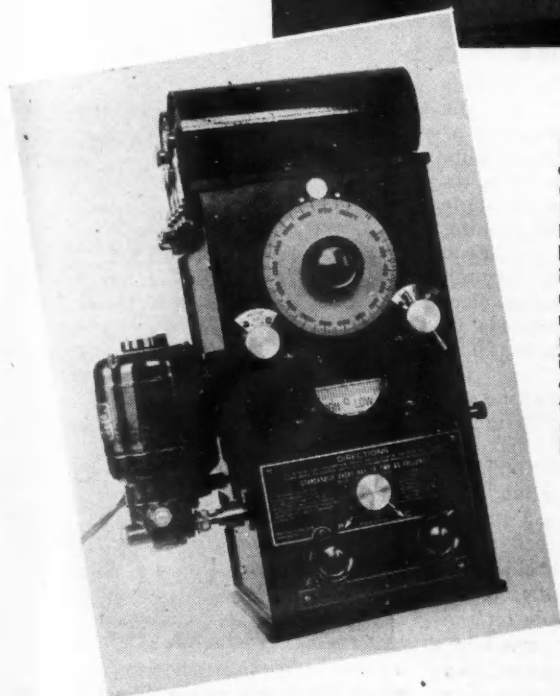
(Center)—The Diamond Machine Company, Providence, R. I., is exhibiting its new G-4 surface grinding machine. This recent addition is said to incorporate many improvements resulting in greater flexibility of operation



(Right)—To meet a demand for heavy cold riveting, The High Speed Hammer Co., Rochester, N. Y., has just brought out its 7B riveting hammer illustrated. This new machine has a capacity of $\frac{3}{4}$ to $1\frac{1}{2}$ inch diameter stock depending on the material and size and shape of the head. It has a horizontal gap of $15\frac{1}{2}$ inches



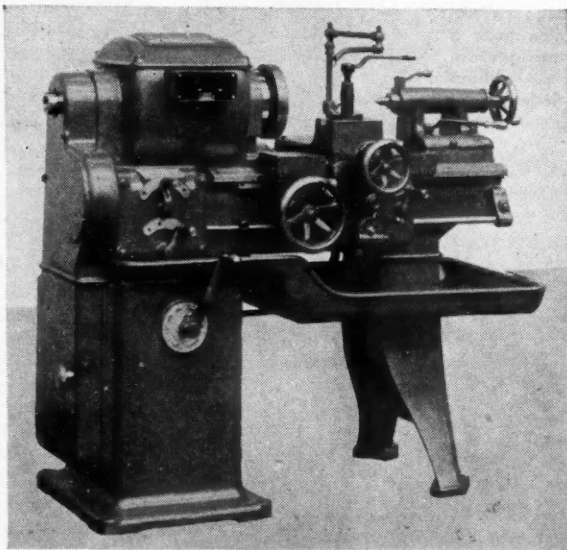
(Left)—The Foxboro Company of Foxboro, Mass., announces an improved type of motor drive unit called the type H for installations where the Foxboro potentiometer control pyrometers are used singly. This drive comprises a ball bearing enclosed motor and a double worm and gear speed reducing system packed in lubricant. The motor is said to be powerful enough to operate one additional controller through a coupling if desired.



High-Speed Lathe For Cemented Carbide Tools

The R. K. LeBlond Machine Tool Company, Cincinnati, Ohio, has just announced an eleven-inch, high-speed motor head production lathe designed to take full advantage of the higher cutting speeds possible with tungsten and tantalum carbide tools.

The driving motor is dynamically balanced and is mounted on the lathe spindle in order to secure maximum power with minimum vibration. Spindle speeds ranging from 450 to 3600 r.p.m., with nine changes of feed ranging from .001 to .014 in. per revolution of the spindle, are available.



R. K. LeBlond Machine Tool Co. exhibits high speed production lathe

Cross line starting and the electric plug stop are said to make it possible to bring the machine up to full speed in two seconds and to stop it in 2½ sec.

Enameling Small Parts By Centrifugal Pressure

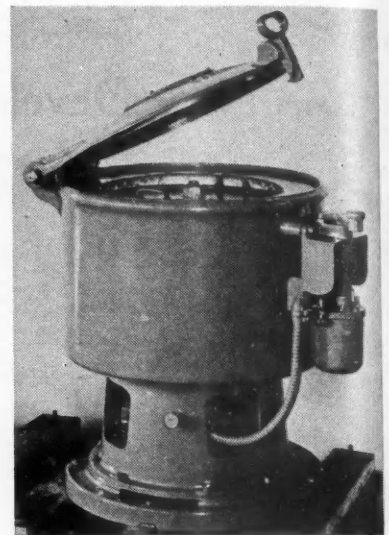
The Barrett Filwhirl Enameler is an interesting application of the centrifuge for enameling small parts on a production basis. This recent product of the Leon J. Barrett Co., Worcester, Mass., is claimed to coat the work more evenly than can be done by spraying, dipping or tumbling.

This machine has a built-in motor of the induction type, with the rotor mounted on and keyed to the spindle which carries the removable pan and wire mesh basket for parts. The complete motor assembly, housed and mounted on ball bearings, is known as the Hy-Torq Head, which when revolving unbalanced loads oscillates on a large ball-and-socket universal mounted in the base of the machine. A stabilizing device consisting of four heavy springs, attached to the motor housing,

is designed to dampen these oscillations.

A reversing switch, in which all contacts are made and broken in an oil bath, is operated by a lever at the front of the machine. The motor and switch design are such that a full load can be accelerated, decelerated and reversed without the use of a rheostat or moving contacts. An interlocking device makes it impossible to operate the switch when the cover of the machine is open.

The body or outer shell of the enameler is a one-piece, semi-steel casting with a drain outlet at the bottom. The removable sheet-metal liner which fits inside permits changing from one color enamel to another, without danger of contamination.



Barrett filwhirl enameler

of the gear tooth. Gears up to 10 in. diameter can be handled.

For gears to mate quietly and efficiently they must be alike in normal pitch, and to check this the Illinois normal pitch and space measuring machine No. 337 has been developed. The operation is semi-automatic and it is said an average gear of 30 teeth can be checked in one minute.

Designed to determine the correctness of the helices, the helical lead checking machine will take gears up to 12 inch diameter, and will check helix angles from 0 to 90 degrees.

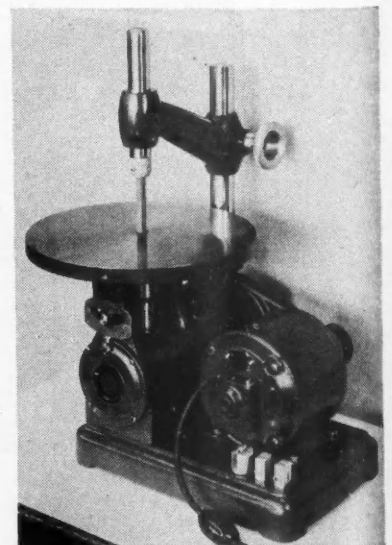
When a record of the various checks is desired, the Illinois gear charter will produce charts of running gears showing the combined errors of tooth profile, tooth spacing, tooth interference and eccentricity.

Illinois Tool Works New Die-Filing Machine

The latest product of the Illinois Tool Works, Chicago, Illinois, is a die filing machine which uses any type or size of file that can be held in a ½-in. chuck. The table, which is 12-in. in diameter and can be tilted to an angle of 20 degrees, has a removable bushing in the center to make room for large files, saws or stones. Driving through a "V" belt, the ¼ h.p., 1750 r.p.m. electric motor provides spindle speeds of 450 and 600 strokes per minute. The length of stroke is 1½-in.

All moving parts of this machine are lubricated under pressure, the design of the oiling system being such that the oil takes up the impact of the spindle.

Other exhibits of this company include machines designed to aid in the checking of gears for correct tooth profile, spacing, etc. A quick check on the general run of automobile, truck and tractor gears can be made on the involute profile measuring machine, designed to determine the nature and amount of error in the involute curve



Illinois Tool Works die filing machine

Heavy-Duty Surface Grinder

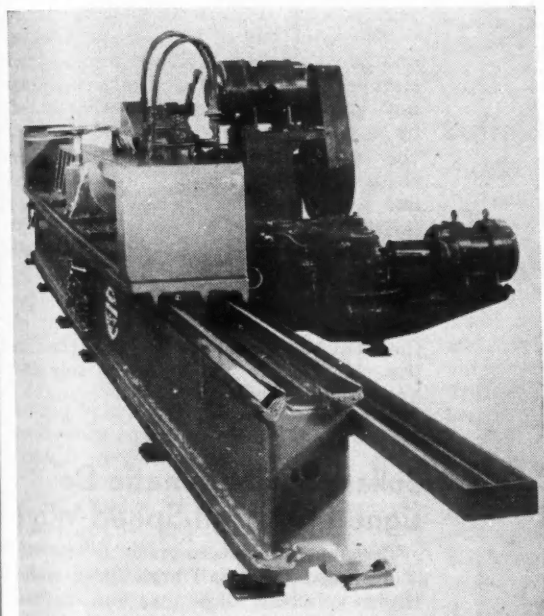
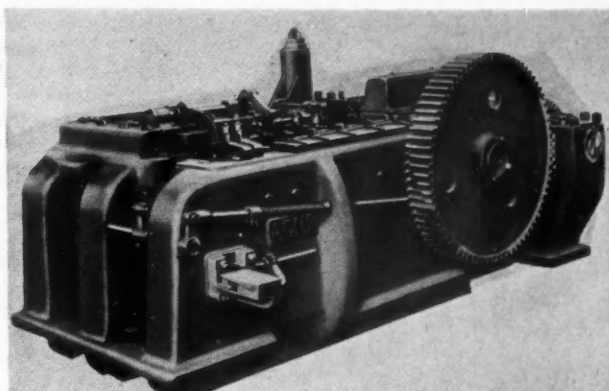
The No. 75 surface grinder, a new product of The Bridgeport Safety Emery Wheel Company, Bridgeport, Conn., is made in various lengths from 5 to 18 ft. The illustration shows the machine equipped with a revolving magnetic chuck, used when grinding shear blades.

The work table operates on "V" and flat ways, which are equipped with a forced feed lubrication system, and are protected from spray and grit from the grinding wheel by guard strips extending the entire length of the bed. An Oilgear hydraulic pump and motor provide the carriage drive, any desired speed up to 90 ft. per min. being easily secured.

The spindle is of large diameter mounted on roller bearings, and the sectional grinding wheel, mounted in a

a much quicker start when the foot treadle is pressed, thereby reducing the heat loss in the metal being worked.

Acme Machinery Co. Model 35 forging machine



Bridgeport Safety Emery Wheel Co. No. 75 surface grinder

steel chuck, is fed to the work hydraulically.

Another machine recently announced by this company is a high speed floor grinder, having a novel spindle construction. Each wheel has its individual spindle mounted on roller bearings, the two spindles being coupled together by a flexible coupling. Three speed steps are provided to maintain a satisfactory peripheral speed as the wheels wear down.

Forging Machine With Cushioned Drive

Among other new features in the model 35 Acme forging machine, is a friction cushioned drive, claimed by the Acme Machinery Company of Cleveland, Ohio, to so cushion the starting and stopping action as to greatly reduce the usual shock on the motor and driving mechanism. It is also said to give

The clutch is made up of aluminum alloy discs, cored to permit a constant flow of air through the center, to aid in cooling. On the smaller machines the clutches are mechanically operated, but on the larger jobs the clutches and brakes are air controlled through a single piston. The air controlled clutch is said to facilitate die setting as it permits "inching" the machine through the entire cycle.

The crankshaft which is carried on three main bearings, is of the eccentric type having a large bearing area in the sliding head. The whole construction is claimed to be very rugged and to eliminate crankshaft deflection under heavy stresses. The header slide is of the full suspended type, with the supporting surfaces lined with bronze and sliding on hardened and ground steel liners fitted in the bed. Adjustment is provided to take up any wear, both on the vertical flat sliding head surfaces and in the large eccentric bushing.

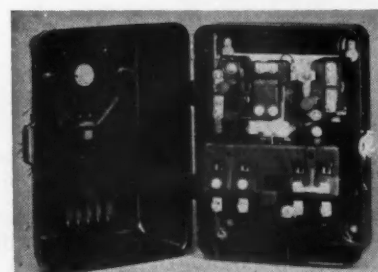
The movable die slide is made of steel and has the same suspended type slide features as the header slide. The movable die is cradled in a hardened and ground plate attached to the movable slide and operates against a breast plate, permitting adjustment longitudinally when necessary to match the position of the stationary die.

Westinghouse Contactors For Machine Tools

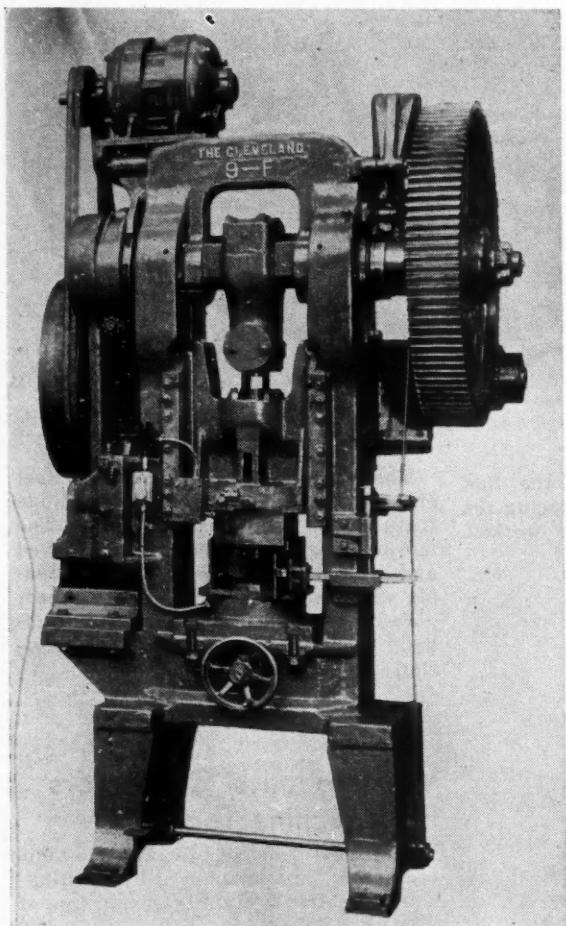
The new line of 15 and 25-amp. contactors, just announced by Westinghouse Electric & Manufacturing Co., of East Pittsburgh, Pa., is designed for machine tool application. The confinement of the arc within the de-ionizing chamber is said to permit a compact design desirable for built-in applications. The cabinets can be obtained with start and stop push buttons built into the cover if desired.

Double-break silver contacts are used. The operation of the De-ion contactor is said to depend on the principle that the thin layer of air immediately adjacent to cold cathodes will withstand about 250 volts before breaking down, and after having been subjected to an arc, de-ionizes rapidly and acquires the ability to withstand this voltage again very quickly. When the contacts separate, the arc is instantly forced into the De-ion grid chamber, where it is extinguished.

These contactors are also being built in 100 and 150-amp. capacity.



Westinghouse Electric & Mfg. Co. have announced a line of 15 and 25 ampere contactors



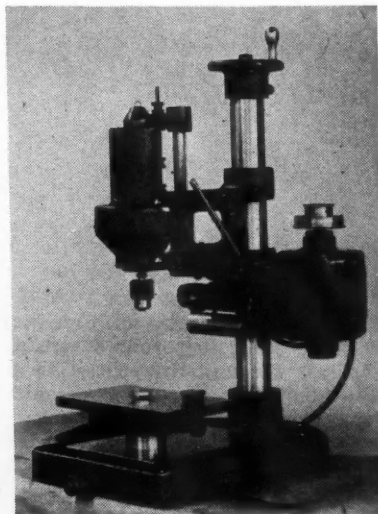
New Cleveland
trimming press

New Cleveland Trimming Press

Model 9 F is the latest trimming press brought out by the Cleveland Punch & Shear Works Company, Cleveland, Ohio. Arranged with a "V" belt motor drive, this machine operates at 65 strokes per minute and is used for upsetting test pieces, which are first cut to the proper length on the side shear. After being cut the pieces are set on end under the inner slide and are held upright by means of an adjustable magnet block. The entire attachment is boxed in, and is equipped with a safety door, so that the press cannot be operated until the door is closed. The clutch also has a non-repeat attachment, providing an additional safety feature.

New Lanhydro Threading Machine Has Hydraulic Control

The Landis Machine Company, of Waynesboro, Pa., is featuring its new Lanhydro threading machine, with hydraulic operation. Designed primarily for automotive work, this new product, illustrated, can be furnished with hydraulic mechanisms to provide automatic magazine feed, carriage feed and return, gripping and releasing of the



Langelier high
speed drill

Lanhydro
threading ma-
chine is hydrau-
lically operated

work and engagement of the lead screw.

The Landis Company has also recently developed a unique work-holding attachment for use on the Landmaco threading machine. This special holding and centering device permits threading to be done on a shaft at any point desired. The work is supported on centers in such a way that the die head can advance over the shaft to cut threads where required.

New Drill Has Speed Of 8000 R.P.M.

The Langelier Manufacturing Co., Providence, R. I., has just added to its line an improved high-speed bench drilling machine having a spindle speed of 8000 r.p.m. maximum and 2000 r.p.m. minimum. The spindle itself is hardened and ground and has a sliding fit in a sleeve mounted on two ball bearings housed in the head casting.

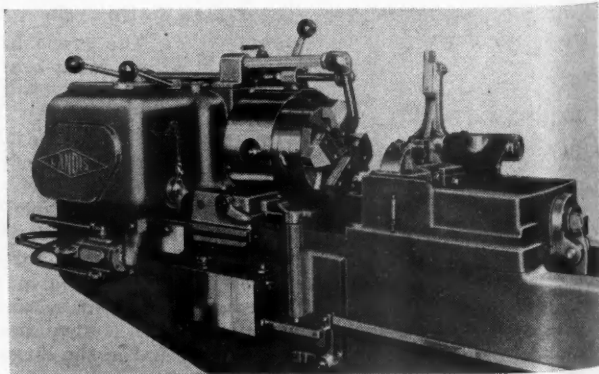
The head has a vertical adjustment on the supporting column and can be clamped rigidly in any desired drilling position. The adjustment is actuated by a handwheel located on the top of the column and attached to a ball thrust screw which fits into a bronze nut fastened to the head. The capacity of this tool is $\frac{1}{4}$ in. in steel.

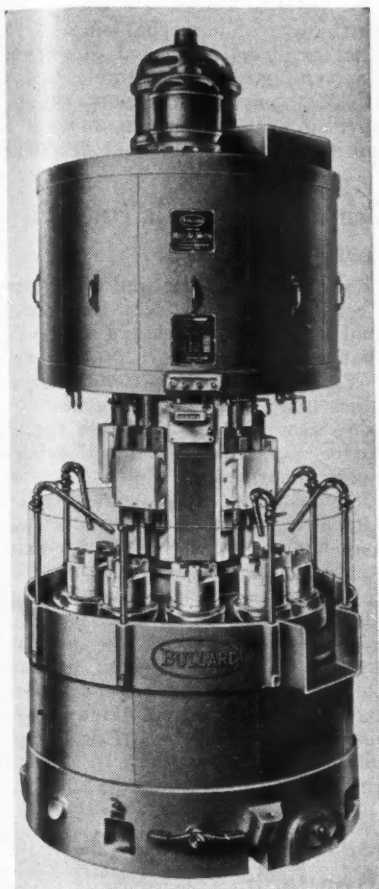
A novel feature is an encased, small electric light bulb, mounted directly in back of the chuck in such a way that the light can be focused on the end of the drill. A double switch attached to the side of the machine controls the light and the motor.

Bullard Multi-au-matic De- signed for High-Speed Work

The type J Multi-au-matic illustrated is designed for small high-speed work. Eight spindles allow one station for chucking and seven stations for work, with speeds independently variable to meet the requirements of any station, the range being from 168 to 1509 r.p.m. The feed ranges from 0.004 to 0.036 in. per spindle revolution.

This machine, product of The Bullard Company, Bridgeport, Conn., has an electrical control consisting of three stations conveniently located, each





Bullard Mult-au-matic

having four separate buttons, one for emergency control which stops all functions, a second for starting the main drive motor, a third for head traverse advance and a fourth for head traverse return. The head traverse, advance and return, is operated by a separate motor installed for this purpose.

The mechanical, power-operated chucking mechanism is inbuilt, and is provided with an adjustment for obtaining various holding pressures. Control of chuck operation is by a foot lever at the loading station.

In addition to the machine described the Bullard Company is also exhibiting its single spindle vertical automatic lathe, high-speed vertical turret lathe and the hydro-shift vertical turret lathe. Roto-Broach, the new method of broaching, will be demonstrated.

Quick Speed Changes On Millholland Lathe

Designed for automotive production, the new No. 5 and No. 6 turret lathes announced by the Millholland Sales & Machine Co., of Indianapolis, Ind., are said to embody several unique features. The headstock can be furnished with four speeds, driven by either a single or multi-speed motor, or can be supplied with a single pulley drive giving 12 spindle speeds through a set of multiple-disc clutches and one sliding gear.

All gears in the headstock being in constant mesh, with the exception of the one sliding ratio gear, instantaneous speed changes are said to be possible, which is an aid to high-speed production.

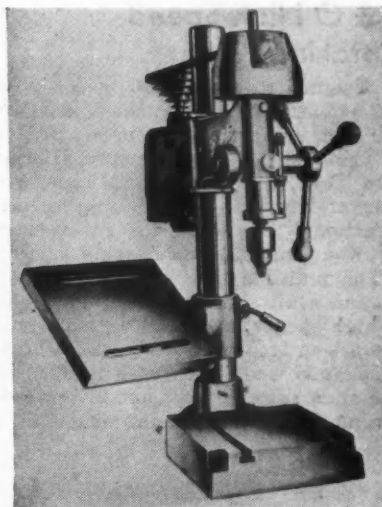
The turret slide is constructed for fast operation with the hexagon turret automatically clamped and unclamped, and indexed, and provided with six automatic stops for duplication of work. The turret slide, or ram, is of a rigid structural shape, with a buttressed method of supporting the turret tools while under the strain of coarse feeds at high spindle speeds. One taper jib is said to be ample for permanent alignment and rigidity, since it is so securely interlocked into the saddle that it becomes almost an integral part of the casting, and yet can be adjusted when necessary.

The capacity of the No. 5 lathe is 1½-in. bar work with the turret having a 14-in. travel. The larger machine will handle 2½-in. bar work with 14-in. travel.

Buffalo Forge Co. Adds Drill

The Buffalo Forge Company of Buffalo, N. Y., has added the No. 15 production drill to its line of power punches and shears, bar cutters, bending rolls, multiple spindle drills, etc. Made in both floor and bench models, and having five speeds to meet the requirements of both high and low speed drilling, this machine is designed for accurate, fast operation. The spindle is carried on large double row ball bearings.

By means of special attachments the drill can be adapted as a woodworking tool to handle shaping, routing, sanding, grinding, and mortising.

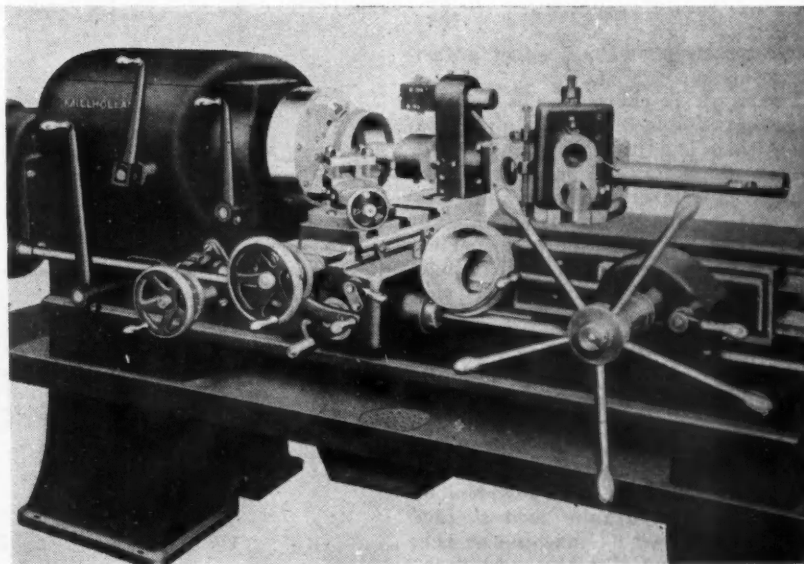


**Production drill Model 15 of the
Buffalo Forge Co.**

Improvements Made in Cutting Tools

In the improved line of lathe, planer and shaper tools manufactured by the O.K. Tool Company, of Shelton, Conn., each bit is separate from its holder, and by means of a clamp is locked rearwardly against a slanting shoulder, and downwardly into a bottom angular, serrated mating surface in the holder. This design is said to eliminate all possible sideways or lengthwise tipping of the tool bit and does not throw strain onto the locking clamp. By loosening the clamp the bit may be adjusted laterally to compensate for grinding.

These tool bits are made of drop forged high-speed steel, and the holders are made of chrome-nickel alloy, drop forged and heat treated for toughness.



New Millholland lathes are designed for automotive production

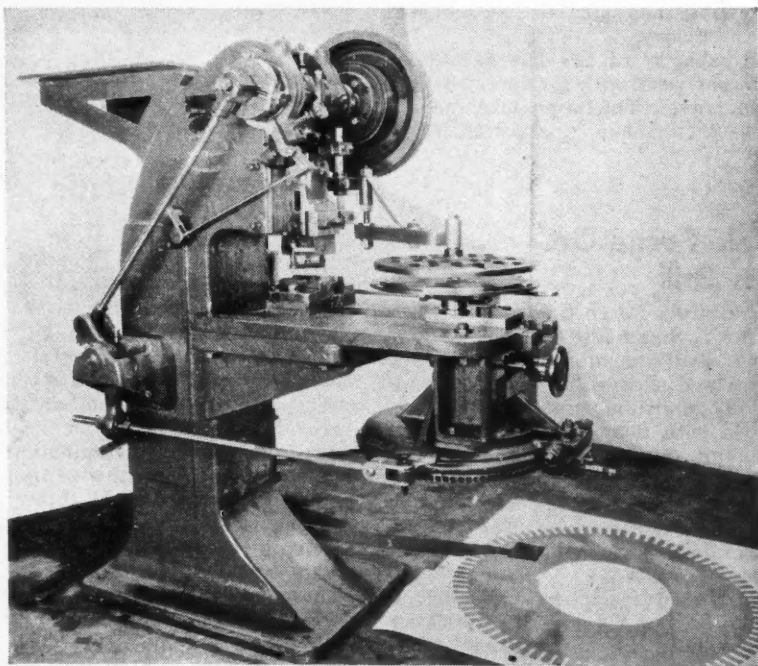
V & O High-Speed Notching Press

Designed to operate at speeds up to 650 strokes per minute, the V & O No. 410 high speed notching press, product of The V & O Press Company, Hudson, New York, is of the pedestal type, with journal bearings of overhanging construction. The shaft has an eccentric throw affording large bearing surface.

The multiple disc clutch is said to eliminate all shocks from engagement at high speeds, and also to give a positive action free from backlash. A brake is engaged when the clutch is released. The slide runs in ways cut in the body casting, adjustment being made by a

minute is available if desired, although this can readily be reduced by means of a hand wheel located on the front of the saddle. The cross feed of the machine is automatically controlled and may be set so as to operate at each reversal of the reciprocating table, or at one end of the stroke only. The amount of cross feed is adjustable and can be set to feed either in or out as desired.

The large hand wheel, which provides direct action for raising and lowering the wheel head, is graduated in one-quarter thousandths of an inch. For grinding to very close limits a knurled knob in the center of the wheel provides adjustments within one ten-thousandth of an inch.



V & O Press Co. has developed a high-speed notching press

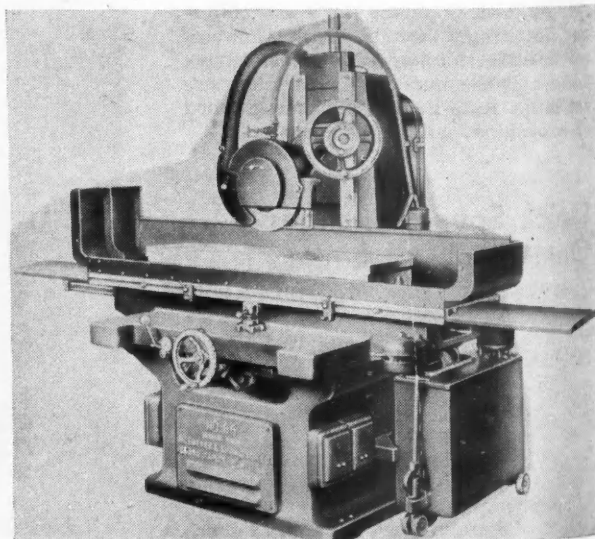
single loose gib and one set of adjusting screws.

The work is carried on a friction-driven positive locking indexing mechanism, which is adjustable in and out for various diameters of laminations by means of a lead screw having a micrometer dial. The index rings are of large diameter for accurate spacing, and the pawl is arranged so that there is a minimum of wear on the ring notches or teeth.

Large Surface Grinder Has Hydraulic Feed

With the working surface of the table 12 in. x 48 in. the new No. 65 Grand Rapids hydraulic feed surface grinder is the largest machine of this type produced by Gallmeyer and Livingston Co., Grand Rapids, Mich. A longitudinal table speed of 125 feet per

Gallmeyer and Livingston Co. is exhibiting large surface grinder



No belts or chains are used in driving the hydraulic mechanism as a 3 hp. motor is direct connected to a Vickers vane type pump. A portable, self contained motor driven coolant system is provided, which permits moving the tank for dumping, flushing or refilling.

Grinding Wheels for Every Purpose

For the sharpening and conditioning of cemented carbide tools, the new diamond wheels manufactured by the Carborundum Company of Niagara Falls, N. Y., are made in various sizes and shapes to meet all requirements.

For general tool room use the new Aloxite brand "AA 170 bond" grinding wheels, identified by their clean, pure white color, is recommended. It is claimed that this new bond gives a wheel having greater ease of penetration with less grinding pressure, and requires less dressing while handling a wider range of steels.

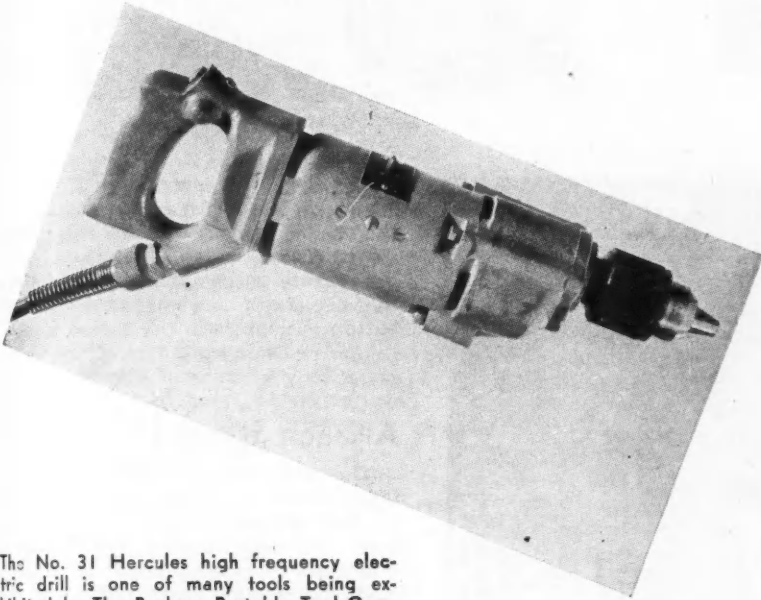
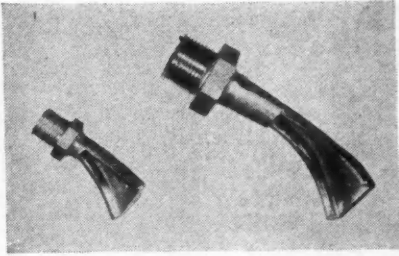
For production work the new blue "270 bond" wheel is being produced. Like the "AA" wheel, it is created from a new type of aluminum oxide abrasive combined with "170 bond," and is particularly adapted for use in duplicate grinding operations.

Measuring 2/1,000,000 Of an Inch

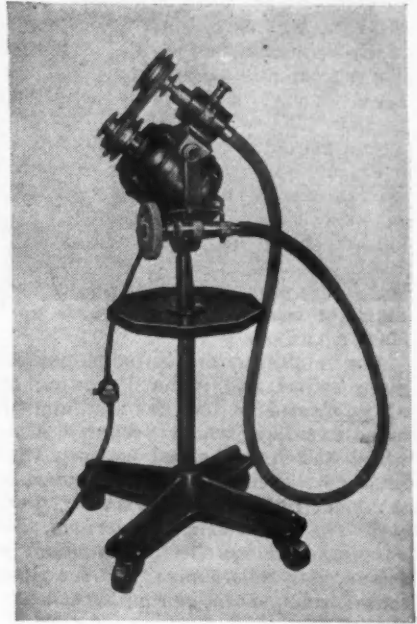
The Johansson division of the Ford Motor Company, Detroit, Mich., is demonstrating at the show the use of Johansson gage blocks, who are available in three types, B, A and AA. The "B" blocks are accurate within 8/1,000,000 of an inch; the "A" blocks within 4/1,000,000 of an inch; and the "AA" blocks within 2/1,000,000 of an inch.

Johansson gage blocks are being used in connection with the checking of inspection gages, plug gages, micrometers, production gages, the lead of screw thread, and similar jobs.

The Chain Belt Company of Milwaukee, Wisconsin is marketing the Rex spray nozzle, illustrated, for cleaning and preparing metal parts for rust proof coating in advance of painting or enameling. The flat cutting spray produced is said to insure a thorough washing.



The No. 31 Hercules high frequency electric drill is one of many tools being exhibited by The Buckeye Portable Tool Company of Dayton, Ohio. Features of this drill include cool operation through a special ventilating system and a plug-in type cable that can be quickly replaced by the removal of a single screw. It has a rated capacity of $\frac{3}{8}$ inch and a speed of 800 R.P.M.



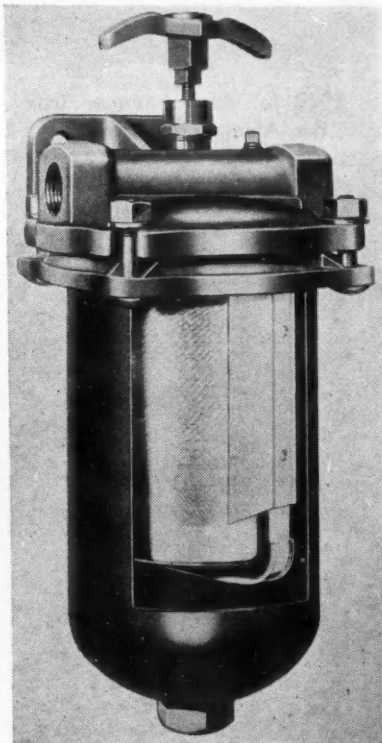
This Supra-Biax unit, product of The Charles L. Jarvis Co., Gildersleeve, Conn., is designed for grinding, sanding, snagging, filing, buffing, polishing, etc. Speeds of 950, 1750 and 3500 R.P.M. are normally supplied. For general work a $\frac{1}{2}$ H.P. motor is used and for heavy duty service at 1 H.P. motor is recommended.

New Line of Filters For Coolants and Cutting Oils

Motor Improvements, Inc., of Newark, N. J., is presenting a new line of filters for coolants and cutting oils, covering a wide range of sizes up to 1000 gallons per minute capacity.

These filters are made with elements of either cloth or metal. In the former several hundred square inches of filtering material are folded into a relatively small container, on the accordion principle, through which the coolant or oil is passed.

The metal filtering element is made of a ribbon of bronze, monel, stainless steel, or other metal, wound around a corrugated cylinder or cage. This ribbon is drawn so that it is wedge-shaped, like the letter V, and is wound with the pointed edge on the inside. Small projections along one edge of the flat side of the ribbon keep the strands from touching at all points as they are wound around the inner drum, thereby forming tiny filtering slots approximately .0005 inch wide. It is claimed that the sharp edges of the ribbon, at the top



and bottom of these slots, shear away any abrasives that may be carried in the coolant or cutting oil.

New Universal Turret Lathe Warner & Swasey Exhibit

Warner & Swasey Co., Cleveland, Ohio, are presenting a new universal turret lathe, No. 4, said to have a unique head construction in that all the shafts are placed behind the spindle of the machine, some arranged one above the other on the rear side of the bed. With the shafts arranged in this manner a larger bar capacity is available.

An improvement designed to make for ease of operation and to speed production is the direct reading head shift. This indicator on the front of the head shows by means of an arrow the speed of the spindle without reference to a chart.

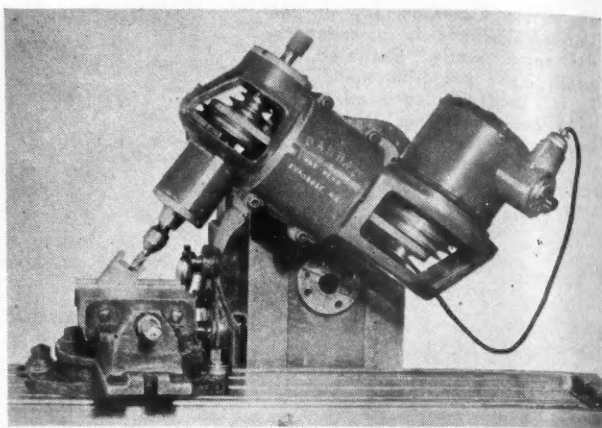
The new cross-slide and apron are designed to give ample rigidity for heavy-duty work and for the high speeds possible when using cemented carbide tools.

Dalrae Speedmill Attachment

The Dalrae Tools Company, Syracuse, N. Y., has recently placed on the market a high-speed milling attachment for use on milling machines and horizontal boring mills. This attachment is furnished with either a $\frac{1}{4}$ -hp. or $\frac{1}{2}$ -hp. motor, and when mounted on the overarm of a machine swivels in four directions and mills at any angle. The $\frac{1}{4}$ -hp. machine mills with cutters up to $\frac{9}{16}$ -in. diameter, and at speeds up to 4000 r.p.m., while when equipped with the larger motor, cutters up to $\frac{7}{8}$ -in. diameter can be used, at speeds up to 3000 r.p.m.

For rigidity, the spindle housing, main swivel and motor mounting are all contained in one casting, and the spindle pulley, which produces a fly-wheel action, is housed between three sets of ball bearings. The standard attachment is built to fit a $4\frac{1}{4}$ -in. diameter milling machine overarm, but adapters for smaller diameters, for rectangular overarms and for horizontal boring mills can be furnished.

Dalrae Tools Co. is introducing a high-speed milling attachment

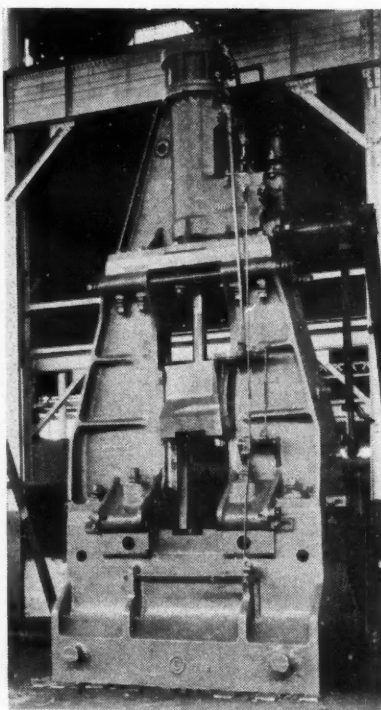


Mattison Surface Grinders

The Mattison Machine Works, Rockford, Ill., is building 12, 14 and 16-in. surface grinders with built-in motors, the rotors being mounted directly on the wheel spindles and balanced as units. This construction is claimed to eliminate vibration of the grinding wheel as well as to insure the full delivery of power.

Longitudinal table travel is hydraulically operated by two cylinders which provide uniform speed in either direction. The stroke is adjustable to cover any portion of the table. The transverse feed of the wheel is also hydraulically operated, the wheel automatically advancing across the work at each reversal of the table.

Either a hand or power hoist is provided for raising the wheel from the work. With the electric power hoist the control push button is located in the



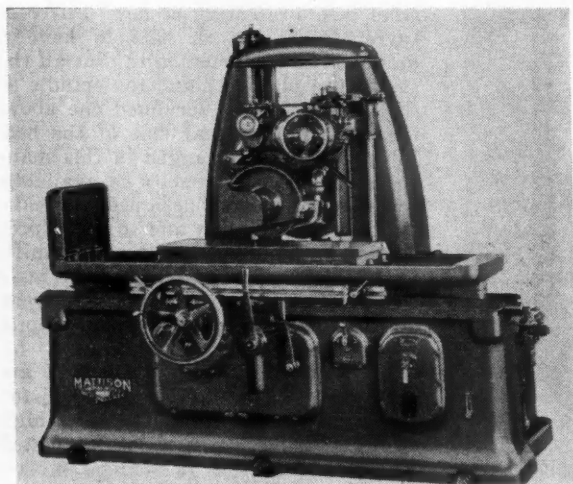
5000 lb. drop hammer from the Alliance Machine Co.

end of the clutch lever, so that with one movement the motor can be started and the clutch engaged. The downward movement of the wheel is controlled by a separate push button, so arranged that the travel continues only while the button is depressed.

Alliance Steam Hammers

The illustration shows one of the latest 5000 lb. steam drop hammers, product of the Alliance Machine Company, Alliance, Ohio. The frame is cast steel, thoroughly annealed, and the ram guides and adjusting shoes are steel forgings, removable without detaching the ram from the piston rod. The cylinder is cast steel, with large steam passages. The cylinder bore, main valve, and throttle valve are bushed with alloy iron. The main valve which is of the double ported piston type, designed for quick pick-up, is operated by a one-piece steel forged wiper actuated by the incline of the ram, the valve gearing being so designed that in case of connection failure, the valve will drop to the bottom of its chamber, opening ports to the exhaust.

A safety cylinder cover is provided, containing a compression type plunger so designed that when it is forced off its seat, live steam is admitted from the steam chest to the top of the cylinder.



The Mattison Machine Works surface grinder with built-in motor

New Cleveland Automatic Multiple-Spindle Machines

The Cleveland Automatic Machine Co., Cleveland, Ohio, announces the new Model K spindle bar machine in two types, four and six-spindle, the former having a capacity of $3\frac{3}{4}$ -in. round, and the latter $2\frac{1}{4}$ -in. round.

The spindles are mounted in precision bearings said to eliminate all radial and axial deflection. Compression collars are carried on each spindle to compensate for any slight variation in bar diameters and eliminate strain on the chucking mechanism. The chuck-operating fingers are counterbalanced

to overcome centrifugal force when operating at high speed.

The work-spindle turret is a one-piece casting supported in two wide bearings, one at either end of the turret housing, and indexed by a Geneva movement providing a slow action at both start and finish of the indexing stroke.

The tool feed is designed for either universal or special camming. The gears are arranged for a geometrical progression of feeds which remain constant, regardless of the changes in spindle speeds.

New Cincinnati Tool Room Lathe

One of the recently announced products of The Cincinnati Lathe & Tool Company, Cincinnati, is its 18-in. tool room lathe having the motor mounted inside the leg. Twelve spindle speeds are obtainable in geometric progression by shifting three levers, it being possible to select any desired speed without going through unnecessary changes. The range and number of speeds can also be increased to meet special requirements, such as when using tungsten carbide cutting tools.

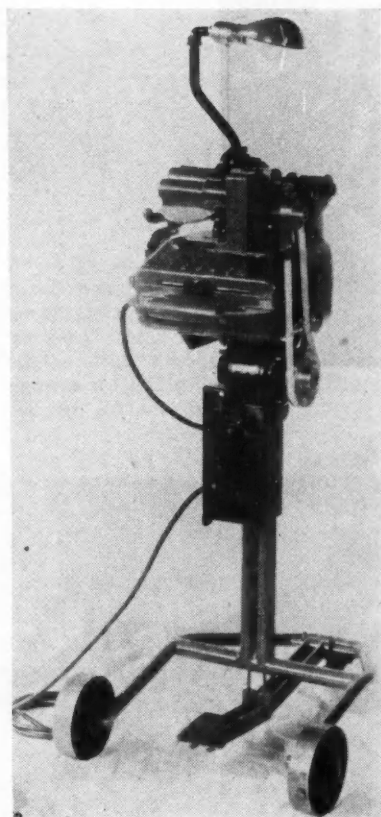
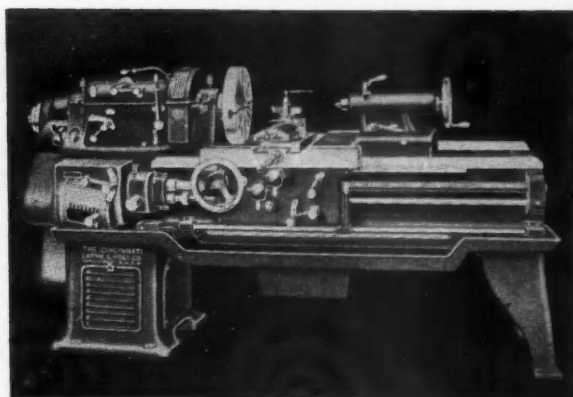
The gear box, mounted at the front end, provides from 32 to 96 changes to take care of any thread or feed required.

The clutch used on this lathe is of the compression disc type designed to transmit the full power of the motor. Provision is made to prevent drifting and accidental starting when not in use. When removing chucks and face plates the spindle can be locked by means of a plunger, thereby protecting the gears and shafts in the head from strain.

Anti-friction bearings are fitted in the headstock, quick change gear box and apron units. Automatic force feed lubrication is a feature of this lathe.

This company is also exhibiting a 22-in. heavy duty lathe, fitted with a special double rest permitting a series of cuts to be taken simultaneously with a number of cutting tools.

The Cincinnati Lathe & Tool Co. is offering a tool room lathe with twelve spindle speeds



Eisler flexible cable cutter

Welder and Trimmer For Flexible Shafts

Flexible shafts, stranded wire and cables have a tendency upon being cut to unravel at the ends, making it difficult to join together again. To meet this condition the Eisler Engineering Company of Newark, N. J., has developed a combination cutting, welding and trimming machine with which it is claimed flexible cable can be cut apart without unraveling, or two pieces can be joined with little loss in flexibility.

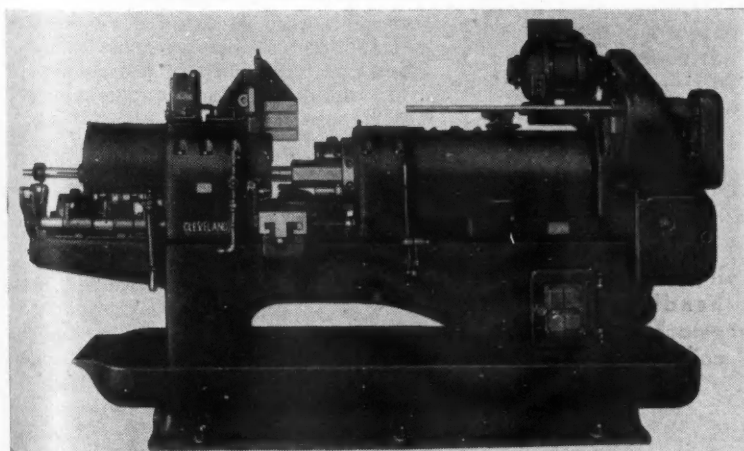
The cable to be cut is clamped in the welding jaws, and current is applied which first welds the strands together and finally severs the cable. The ends are then placed in the trimmer, equipped with a motor driven carbide wheel, and finished off.

In welding two pieces of cable the ends are first prepared as outlined above, then welded and afterward placed in the special annealing device with which this machine is equipped. After proper annealing the cable is inserted in the automatic centering device of the trimmer and all burrs on the joint are ground off.

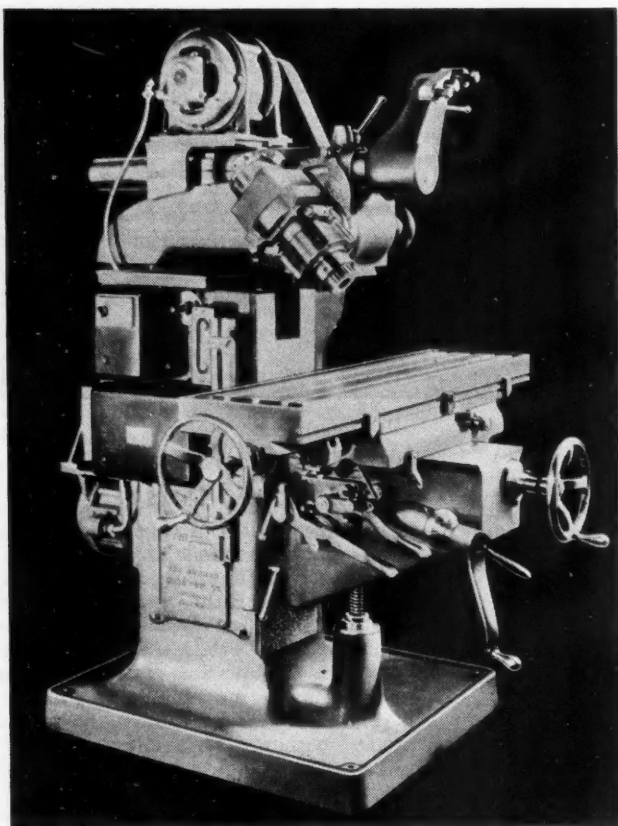
Designed to operate on either 110 or 220 volts, this welder will handle solid rods, wire and bars as well as flexible shafts and cables of steel, nickel, brass, copper and other metals up to .250 in. thick.

Modine Manufacturing Co.

The Modine Manufacturing Co. of Racine, Wis., which has long specialized in unit heaters for offices, factories, show rooms, etc., has recently added unit coolers designed for year-round use. During the heating season, hot water or low-pressure steam can be circulated through the unit, while in summer, water pre-cooled by ice or mechanical refrigeration, or alcohol, glycerine and non-corrosive brines, can be used as the cooling medium. A drain is provided to carry off any moisture condensed from the air during the cooling process. The unit is made up of a series of vertical copper tubes brazed into copper tanks top and bottom, and enclosed in a heavy steel casing to which is attached a motor-driven fan.



New Cleveland Automatic Machine Co. multi-spindle Model K



No. 22 universal miller being shown by Van Norman

Swiveling Cutterhead on Van Norman Universal Miller

Among the machines being exhibited by the Van Norman Machine Tool Co., Springfield, Mass., the No. 22 universal miller is designed particularly for tool room and pattern shop work, although it will handle many types of production jobs.

The cutter head is driven by an individual motor through triple vee belts to the gear mechanism enclosed in the ram. Nine speed changes are available from 40 to 1100 r.p.m., controlled by two shifting levers. This cutter head swivels and can be quickly adjusted to any angle between 0 and 90 degrees.

By means of simple attachments the No. 22 miller can be used for angular milling, boring, drilling, cutting slots, high speed routing and cutting spirals.

Barber-Colman Company

One of the recent improvements on the No. 3 Barber-Colman hobbing machine is the incorporation of an automatic oiling system which delivers a pre-determined amount of oil to each bearing through a special metering nipple. Built by Barber-Colman Company, Rockford, Ill., this machine is designed for hobbing work up to 5 in. diameter by 7 in. face.

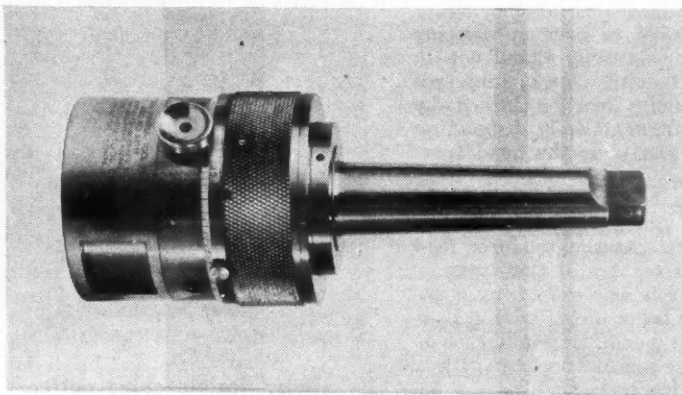
This company is exhibiting at the show the precision universal tool head illustrated. A product of the Precision Tool Company of Bridgeport, Conn., this tool bores, undercuts, turns, etc., and can be used in a milling machine,

drill press or lathe. A feature of this tool head is the graduated micrometer slip collar that can be set to zero when starting a cut and can be adjusted while the tool and spindle are rotating without stopping the machine. Adjustments to 0.001 in. are made with the large knurled sleeve, while for finer adjustment the thumb nut is provided.

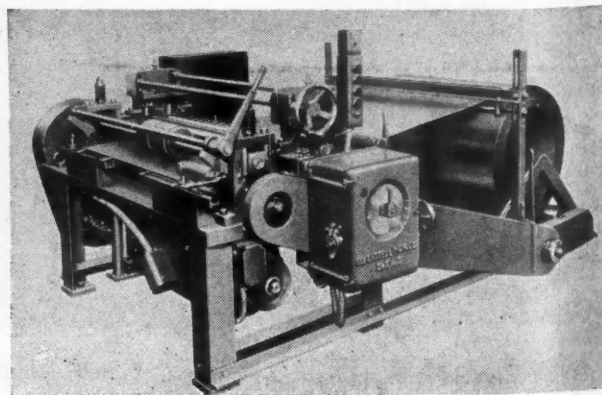
Machine Handles Sheet Stock in Coils

To reduce the cost of handling sheet stock as used in automobile bodies, fenders, etc., the F. J. Littell Machine Company of Chicago, Ill., has just brought out a motor driven feeding and straightening machine complete with a reel for feeding this wide stock. This equipment does away with the necessity of cutting the sheets to length, as the stock can be handled in coils weighing up to 5000 lb.

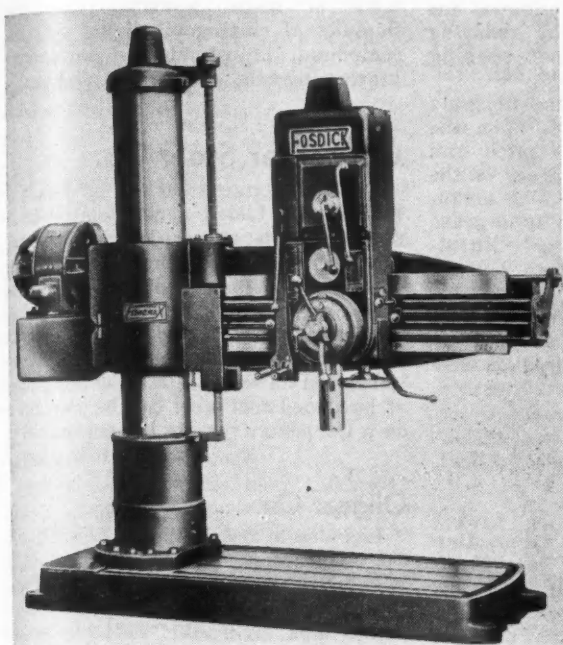
The Littell unit is portable and can be moved with a crane to any press where the blanking is to be done, the only connection between the two machines being electrical. The measuring device, shown in the center of the illustration, makes it possible to secure any length feed by turning the hand-wheel. When the press cuts a blank and the press slide starts up, this feed-



Precision Universal tool head exhibited by Barber-Colman



Littell machine for handling sheet stock in coils



Fosdick drill is easy to control

ing machine automatically starts and feeds the stock forward the proper length through the five roll straightener.

The machine is also provided with a hand starting button, a stopping button, a button for inching forward, and a button for inching back so that the stock is always under control.

The unit illustrated is designed to handle stock 48 in. wide by 0.040 in. thick. A larger machine is also built for handling wider and heavier material.

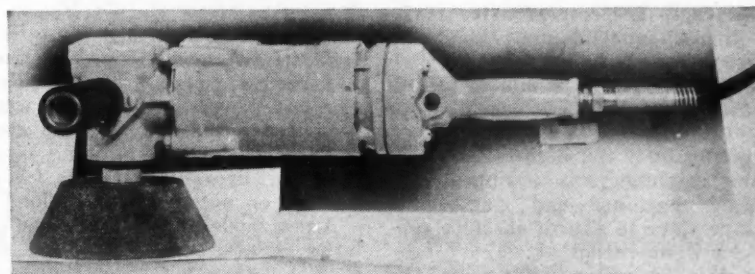
Ease of Control Feature Of Fosdick Drill

Simplicity and ease of control are the two outstanding features claimed by the Fosdick Machine Tool Co., Cincinnati, Ohio, for its 5-ft. 17-in. column radial drill. On the right side of the head is a rapid traverse lever, self-indicating for direction, which hydraulically traverses the head at any speed from a creep up to 15 ft. per minute. On this same side is also the handle which controls hydraulically the clamping or unclamping of the column.

On the left side of the head is the arm raising or lowering handle, which is also self-indicating for direction and controls the hydraulically operated elevating clutch. The rapid traverse lever, column clamping lever and arm elevating lever are so mounted as to automatically return to a neutral position as soon as released. When this happens all hydraulic pressure in the system drops to practically zero, but is quickly restored upon the movement of any one handle.

The power to drive this drill is supplied by an electric motor mounted on the arm and connected through a reduction gear to the back driving shaft

of the head, where 36 speed changes are obtained by shifting sliding gears. The feed, which is provided with a direct reading dial for depth stop, is engaged by a friction clutch. Eighteen feeds in all are provided.



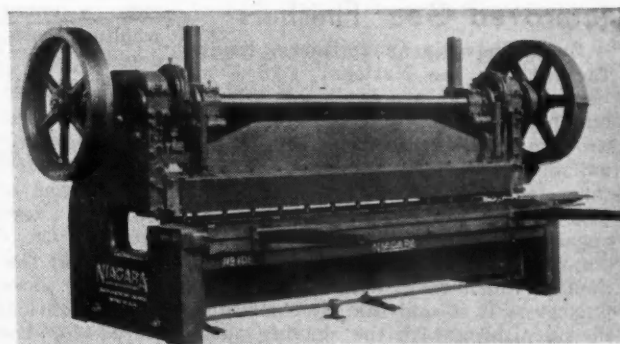
Rotor Air Tool Co. is showing a vertical grinder

The arm, of double-box construction, is mounted on the inner column sleeve, which in turn is mounted on a heavy ball bearing at the top, and on a pair of roller bearings at the bottom, designed to take care of the friction due to the overhanging weight of the arm.

Work Automatically Clamped on Niagara Shears

A feature of the Niagara shear, product of Niagara Machine & Tool Works, Buffalo, N. Y., is the holddown device which automatically clamps the sheet,

Niagara shear with automatic clamp



and holds it during the entire time it is being cut, after which it quickly returns to its initial position. This mechanism has a series of self-adjusting pressure feet which automatically compensate for variation in the thickness of the material being cut. In order to avoid any possibility of the holddown pounding or marring the work, the cam and toggle actuating mechanism accelerates rapidly until these feet approach the work when it slows down, making a soft engagement.

The crosshead of this shear is counterbalanced by springs which are said to give it an easy, smooth action, relieving the shock of clutch engagement. The shear is put into action by depressing the foot treadle. At the completion of one stroke the clutch pin is thrown out of engagement and the crosshead stops in the highest position; if, however, the treadle is kept depressed, the motion of the crosshead will be continuous.

The capacity of the shear illustrated is 5/16 in. mild steel.

Precision Ball Bearings

Three new types of extra-precision ball bearings designed for high-speed use where extreme accuracy is required are now being manufactured by the Fafnir Bearing Co., New Britain, Conn. The bearings are of the single-row radial type, with both rings and balls of high-carbon chrome steel. Deep-grooved races are employed for maximum thrust capacity and cushioning support under shock loads.

The "M" type is available in all standard sizes for light, medium or heavy loads. The "WW" type, developed particularly for high-speed wood-working machinery, is equipped with a special machined and ring-piloted bronze retainer to assure absolute concentricity in operation.

The third bearing, known as the "MM" type, is made to especially high precision standards and has been developed for high-speed machine applications and other special fields. The Fafnir Company is prepared to furnish these bearings with special composition retainers, in place of steel or bronze, where lightness in retainer weight is desired as an aid to running balance.

Quieter Gears With Improved Gear Finishers

Burni-Shave gear finishers, manufactured by the National Tool Company, Cleveland, are applicable to spur and helical gears, and are claimed to produce gears that will run much quieter due to more accurate tooth contours, tooth spacing, parallelism, etc. The method recommended is to cut the gears on a gear machine in the green state, that is before hardening, and then to finish them with Burni-Shave finishers. It is said that by combining the burnishing with the shaving oper-

ation it automatically eliminates one step in production, thereby reducing costs and improving the running quality of the gear.

The time required for the finishing operation naturally depends upon the diameter of the gear, the pitch and width of face, and the accuracy of the cut on the gear machine. The manufacturers state that transmission gears for automobiles are being "Burni-Shaved" at the rate of 200 to 250 per hour, removing errors of cutting, including tooth form, alignment and spacing.

These finishers can be used on any gear burnishing machine.

New Britain-Gridley Machine Co.

As recently reviewed in *Automotive Industries*, a new line of automatic screw machines, both four and six spindle, has been announced by The New Britain-Gridley Machine Co., New Britain, Conn. The spindles are shorter than the average and are mounted on preloaded ball bearings with the aim of preventing radial or axial deflection under the heaviest cuts. The spindle carrier is automatically lifted from its bearing seat just prior to indexing, and held off its seat during the indexing movement, thereby eliminating wear.

Reed-Prentice Corp.

As recently described in *Automotive Industries* a new die casting machine has been announced by Reed-Prentice Corp. of Worcester, Mass. Hydraulically operated throughout, it is designed to produce aluminum, zinc or brass castings. Provision is made for either manual or automatic operation.

A new model sliding gear head engine lathe is also being exhibited at the show.

Chicago Belting Co.

The Chicago Belting Co., Chicago, Ill., is exhibiting different types of leathers used in belts, and all types of mechanical leathers including hydraulic and pneumatic packing. The display also includes belts with stretch removed, and the Rockwood vertical belt drive for machine tools which permits changing the belt tension in a few seconds to accommodate light or heavy cuts. A running model of a tension welding machine shows how Chicago double belts are cemented together under tension.

D. A. Stuart & Co.

By means of new extreme pressure lubricant testing machines, D. A. Stuart & Co., Chicago, Ill., are demonstrating at the show the load carrying and wear characteristics of newly developed lubricating oils and greases required for the increased speeds and

loads of metal working machinery. Samples of cutting oil, liquid grinding compound, industrial and automotive lubricating oils, etc., are on display.

Carpenter Steel Co.

The Carpenter Steel Co. of Reading, Pa., has perfected a new matched set method of selecting the proper tool steel for making all kinds of tools. By means of a simple diagram it is said a tool maker can select easily the proper steel to give whatever quality is most desired, such as toughness, wear resistance, red-hardness, etc. The toughness of hardened tool steel can be measured on a Carpenter torsion impact machine.

Oilgear Co.

Included in the exhibit of The Oilgear Co., Milwaukee, Wis., is the type XM-20 vertical cyclematic broaching machine, the Oilgear fluid power feed pump, and hydraulic variable speed transmission equipment with remote electrical control.

Thomson-Gibb Welding Co.

Designed for welding automobile bodies and similar work, the Thomson-Gibb portable gun welder can make welds in close quarters that could not be reached by a stationary machine. The outfit consists of a power transformer, step down control transformer, heat regulator, contactor, weld timer, air regulator and gage, all in one housing mounted on a truck. Normally 8-ft. leads are supplied with the gun. The weld timer which closes the electric circuit automatically breaks it again the instant the weld is complete, usually in 1/20 to 1/3 of a second. This equipment is a product of the Thomson-Gibb Welding Co., Lynn, Mass.

Oakite Products, Inc.

Up-to-date methods of cleaning parts are being demonstrated by Oakite Products, Inc., New York City, using its newest materials. Miniature models of a wide variety of products, produced on machine tools and which require several or more cleaning operations before the product is completed, are a feature of this display.

E. F. Houghton & Co.

The exhibit of E. F. Houghton & Co., Philadelphia, Pa., includes Vim Tred leather belting, extreme pressure lubricants, leather packings and samples of automotive parts that have been heat-treated with Houghton's Perliton liquid carburizer.

Vickers, Inc.

Vickers, Incorporated, Detroit, Mich., is producing a hydraulic variable speed transmission designed to furnish any

speed between 5 and 700 r.p.m. at the drive end, while the driven end has a constant speed of 1200 r.p.m. This device was recently described in *Automotive Industries*.

SKF Industries, Inc.

SKF Industries, Inc., Philadelphia, Pa., is showing a specially prepared spindle demonstrating a new principle of roller bearing mounting for lathes, milling machines and similar equipment. They are also exhibiting a complete grinding spindle with a new ball bearing mounting.

Cushman Chuck Co.

An electrically operated Cushmatic chuck for engine and turret lathes is included in the exhibit of The Cushman Chuck Co., Hartford, Conn. The pull-push power unit which converts rotary motion to straight line motion is also being demonstrated.

New Departure Mfg. Co.

The variable speed "Transitorq" recently reviewed in *Automotive Industries* is being displayed at the show by The New Departure Manufacturing Co., Bristol, Conn. This drive is said to be positive under all conditions of loading, and the speed may be changed at any time while the device is operating. With a standard 1750 r.p.m. motor the output speed may be varied between 600 and 3600 r.p.m., or between 560 and 5600 r.p.m., depending on the size of the unit.

Lincoln Electric Co.

A feature of the Lincoln automatic motor starter is the safety push button control said to prevent accidental starting. The red stop button extends around and beyond the green start button, so that a bump or fall against the control would move the stop button first. Double break contacts having a wiping and rolling action in combination with heavy spring pressure are said to give long contact life. This motor starter is one of many recent products of The Lincoln Electric Co., Cleveland, Ohio.

Cincinnati Milling Machine Co.

Cincinnati Milling Machine Co. and Cincinnati Grinders, Inc., of Cincinnati, Ohio, are exhibiting many machines of interest to the automotive trade, such as the duplex vertical hydro-broach, the No. 3 centerless grinder with automatic infeed attachment, the 3-24 plain hydromatic milling machine with two-way feed cycle and variable feed attachment, a universal grinding machine and a centerless lapping machine. A special purpose grinding machine recently announced by this company was reviewed in *Automotive Industries*.

C. F. Pease Co.

The new "Mercury" blueprinting machine has just been announced by The C. F. Pease Company of Chicago, Ill. This new product is in addition to the No. 11 continuous blueprinting, washing and drying machine which is being continued. The model 11 is available in two sizes for all widths of paper up to 42 in. or 54 in.

Baker Bros.

Baker Brothers, Inc., Toledo, Ohio, are exhibiting at the show a Baker craftmaster, a 10-HO drilling and boring machine, a cam feed drilling and boring machine and a hydraulic feed drilling and boring machine.

Hyatt Roller Bearing Co.

The Hyatt Roller Bearing Company of Harrison, N. J., is exhibiting, in addition to the regular standard series bearings employing helical rollers, the new HY-Load type of bearing with solid rollers. The display includes the many applications of Hyatt bearings to machine tools.

Timken Roller Bearing Co.

Among the interesting exhibits at the show is one demonstrating the accuracy of Timken roller bearings, product of The Timken Roller Bearing Co., Canton, Ohio. A turret lathe spindle is mounted vertically in roller bearings in a pedestal with two Zeiss Optotest units at the upper end. One of these gages, which magnify indicator readings 2000 times, is set to show spindle run-out, while the other indicates camming action. The spindle is driven at a steady speed of 20 r.p.m.

J. M. Carpenter Tap & Die Div.

The super-crest tap is the latest development of J. M. Carpenter Tap & Die Division of Whitman & Barnes, Inc., Detroit, Mich. A redesign of the U. S. thread has been made which is said to improve tool performance, provide a better fit, give greater strength in the assembly of tapped and threaded parts and increase tap life, while at the same time permitting complete interchangeability with the U. S. standard thread form.

Cutler-Hammer, Inc.

Cutler-Hammer, Inc., Milwaukee, Wis., is showing a new line of standardized machine control, as well as a number of new control accessories for machine tool application. Electric brakes, magnetic clutches and safety switches are also being exhibited.

Link Belt Co.

The Link Belt Company of Chicago, Ill., is displaying typical layouts of silent and roller chain drives for machine tools, including its motorized, positive,

infinitely variable speed transmission and its fractional horsepower variable speed transmission. A Link-Belt motorized reducer is being shown with a section cut away to make the operation of the gears visible.

Chicago Wheel & Mfg. Co.

As recently reviewed in *Automotive Industries*, the Chicago Wheel & Mfg. Co. of Chicago, Ill., has placed on the market the DeLuxe Hand-ee grinder for light grinding, drilling, polishing, sawing and engraving. The tool has a speed of 25,000 r.p.m.

Devine Bros.

A new type polishing wheel introduced by Divine Brothers Co., Utica, N. Y., is said to have uniform density over the entire face, eliminating ridges and marking of the work. The body of the wheel is constructed of vegetable fibers bonded together with a flexible bonding agent, and mounted on a metal hub. One of the features of this wheel is the fact that it can be water-cleaned.

Boston Woven Hose & Rubber Co.

Uniform vulcanization from one end of the belt to the other, resulting in longer service, is claimed for the new process of continuous vulcanization being employed by the Boston Woven Hose & Rubber Co. of Boston, Mass. Every unit of surface area is said to receive exactly the same pressure and same vulcanization as every other unit regardless of slight differences in thickness. The coefficient of friction of these belts is much higher than formerly.

L. S. Starrett Co.

The L. S. Starrett Co., Athol, Mass., is displaying at the show its line of precision tools, including several new models of dial indicators. A complete line of high speed steel and tungsten steel hack saw blades is also being exhibited.

Pellow Machine Co.

The Pellow Machine Co., Detroit, Mich., is showing a new universal sheet metal working machine designed to cut, pierce holes, rivet and hem. The cutting speed of $\frac{1}{8}$ -in.-thick machine steel is 20 ft. per minute.

Shepard-Niles Crane Hoist Corp.

A selective five-speed push button control for cranes and hoists is being manufactured by Shepard-Niles Crane Hoist Corp., Montour Falls, N. Y. The control unit consists of two push buttons, one for raising, and the other for lowering a hoist. Starting with a creeping speed, further pressure on the button brings each of the four succeeding speeds into operation.

New Automotive Products and Materials

Fiske Bros. Have Lubriplate Rights

The manufacture of Lubriplate, to which product reference has been made in these columns a number of times in the past, was taken over during the early part of this year by the Fiske Brothers Refining Co., with works at Newark, N. J., and Toledo, Ohio. Since the acquisition of the Lubriplate rights by this concern, considerable improvement has been made in the original products, and a number of new products have been added to the line. We understand that Lubriplate is being used by a number of car and equipment manufacturers for original application to their products. Lubriplate lubricants are said to react on the metal, and by a combination of adsorption and minute deposition, to form a load-bearing film on contacting surfaces that results in smooth and quiet operation, less friction and less power consumption. It seems to have specially met requirements in aircraft lubrication, being used by the U. S. Army and Navy, as well as by commercial air lines and air ports. Among the aircraft engine parts and aircraft accessories that are being lubricated by Lubriplate are rocker arms and push-rods, controllable propellers, retractable landing gears, inertia starters, controls, magnetos and wheel bearings.

Bendix-Westinghouse Air-Brake Equipment

New products recently developed by the Bendix-Westinghouse Automotive Air-Brake Company of Pittsburgh include a three-cylinder compressor which has twice the capacity of the conventional two-cylinder type, although it weighs only very slightly more. The development of this compressor of increased output was prompted by the increasing use of air in the control of large road vehicles, for gear-shifting, clutch control, steering, etc.

Another innovation is the independent trailer control. This makes it possible for the operator to apply the brakes on a trailing unit independently of the truck or tractor brakes. Use of these trailer brakes minimizes the chances of jack-knifing and provides an additional safeguard in case of an emergency.

A limiting valve, as its name implies, enables the operator to decrease the normal braking force on the front wheels at will. It enables the driver to obtain in accordance with climatic or road conditions, any desired ratio between front and rear-wheel braking pressures. A convenient dial control aids in the adjustment, which can be

made without interruption to the normal operation of the vehicle.

Other items of the air-brake equipment include a low-pressure indicator which gives warning to the operator, by a buzzer or light signal on the dash, when his air pressure is running low; a stop-light switch that can be readily installed in conjunction with the system, and the automatic emergency air brake, a special adaptation of the Bendix system of control.

Titeseal Sealing Compound

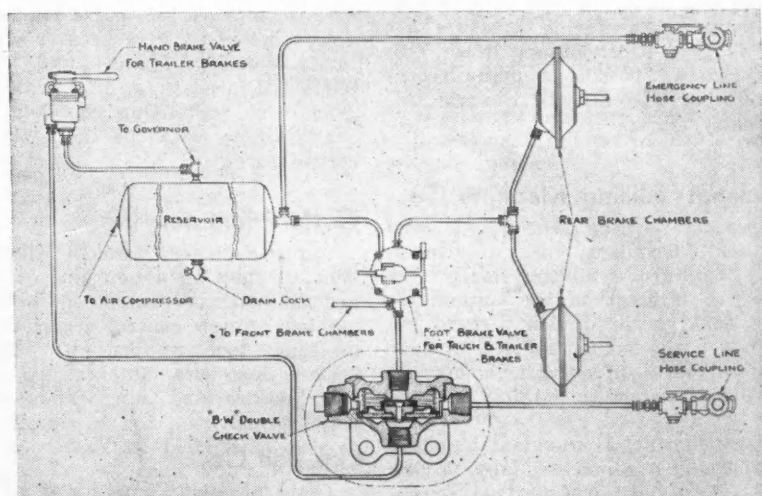
A sealing compound developed originally for the U. S. Army Air Corps, and which is said to have been extensively used by the automobile and aircraft industries to seal against leaks on fuel pumps, intake manifolds, fuel lines, etc., is being marketed by the Fostoria Pressed Steel Corporation, Fostoria, Ohio. It is made in three density grades referred to as Light Weight, Medium Weight, and Heavy Weight. The Light-Weight grade is used to stop wick-action on washers, to seal gasoline line joints, to prevent corrosion of threads, to lubricate springs, shackles and body parts, and to give emergency high-temperature lubrication. The Medium-Weight grade is used for manifold gaskets, for rubber-hose connections, as a filler with water-pump packing, and to seal joints between surfaces of which only one is machined. The Heavy-Weight grade is used as a calking material on airplanes, automobiles, coaches, and marine craft.

New Material for Electric Furnace Resistors

Hevi Duty Electric Company, Milwaukee, Wis., has acquired by purchase from the A. O. Smith Corporation the manufacturing rights to Smith Alloy No. 10, a new chromium-iron-aluminum alloy used in a new line of Hevi-Duty heat-treating furnaces for industrial and laboratory use. This alloy was invented by S. L. Hoyt and R. S. Archer. It makes available electric heat from metallic resistors for operations up to 2400 deg. F. Arrangements are being made for the commercial production of this alloy as resistors of various sizes and for castings.

The preferred composition of the No. 10 alloy is 37.5 per cent chromium, and 7.5 per cent of aluminum, with minor proportions of other elements in addition to iron. It is claimed that the composition used for electrical resistors gives a desirable combination of extraordinary stability at high temperatures, high fusion temperature, and good working properties at elevated temperatures.

The electrical resistance of the No. 10 alloy is of the order of 1000 ohms per circular mil foot. In contrast with this, the nickel-chromium alloy now widely used for electric furnace resistors has a resistance of 660 ohms per circular mil foot. At high temperatures the resistance passes through a maximum at about 1700 deg. F. and then decreases to a value about 5 per cent greater than the resistance at room temperature. This high resistance



Bendix-Westinghouse three-cylinder air compressor.
Scheme for independent control of trailer brakes

means that higher voltages or larger heating elements, or both, can be used in furnace design.

Roxalin Has New Finishes

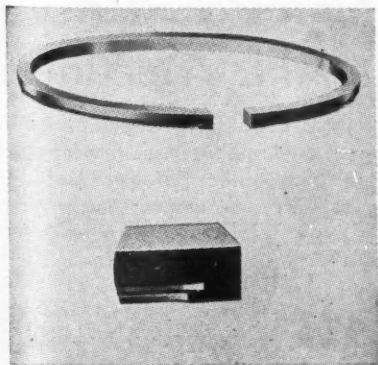
Several new products have been developed recently by the Roxalin Flexible Lacquer Company of Elizabeth, N. J. Two of these, the Taupe Enamel No. 978-A and the stretchable rubber lacquer, have been mentioned in these columns already. Another new product is a fire-resistant paint specially developed for use on the wooden floors of buses. This is a flexible paint that comes in all colors and can be applied either by brush or paint gun.

A new flexible aluminum paint, said to provide a scale-like protective metal sheathing and a smooth, brilliant finish, has also been brought out by the company. It is claimed that dirt and dust do not adhere readily to the surface; that it washes easily and possesses great resistance to chemical fumes, humid atmospheres, corrosion, rust and decay. One grade serves for both indoor and outdoor work. A single application is said to cover stained and discolored surfaces completely with a metallic coat of lasting brilliance.

New Pedrick Piston Ring

A new piston ring design, known as the Pedrick S. C. compression ring, has been developed by the Wilkening Manufacturing Company of Philadelphia and Toronto. It is claimed for this ring that in addition to reducing blow-by throughout the speed and load range, it will reduce the oil consumption.

The S. C. ring has an oil-retaining groove in the outer face, slightly below the center, which terminates a short distance from the ends of the ring. Oil from the groove cannot leak into the gap, and blow-by cannot enter the groove through the gap. Below the groove the face of the ring is cut back,



Pedrick Compression Ring

leaving a passage for oil to enter and leave the groove below the ring.

On the down-stroke of the piston, oil is collected in the oil-retaining

SHOWS

Machine Tool Show—Cleveland..Sept. 11-21
New York Automobile Show, New York, Nov. 2-9
Baltimore Automobile ShowNov. 2-9
San Francisco Automobile Show.....Nov. 2-9
Detroit Automobile ShowNov. 9-16
Buffalo Automobile ShowNov. 9-16
Newark Automobile ShowNov. 9-16
Cincinnati Automobile ShowNov. 10-16
Pittsburgh Automobile Show.....Nov. 11-16
Philadelphia Automobile Show.....Nov. 11-16
Chicago Automobile Show.....Nov. 16-23
Minneapolis Automobile Show.....Nov. 16-23
Columbus Automobile ShowNov. 22-28
Cleveland Automobile ShowNov. 23-30
Montreal Automobile ShowNov. 23-30
Kansas City Automobile Show, Nov. 30-Dec. 6
Automotive Service Industries Show—Atlantic CityDec. 9-13

CONVENTIONS AND MEETINGS

S.A.E. National Production Meeting, ClevelandSept. 18-19
National Industrial Advertising Association, PittsburghSept. 18-20
American Transit Assoc., Bus Division, Atlantic CitySept. 23
National Assoc. Sales Finance Cos.—White Sulphur SpringsSept. 26-28

American Society for Metals, Annual Meeting—ChicagoSept. 30-Oct. 4
American Welding Society, Chicago, Sept. 30-Oct. 4
Empire State Automobile Merchants Association, Albany, N. Y.Oct. 8-9
S.A.E. Transportation Meeting, ChicagoOct. 10
S.A.E. National Tractor Meeting, ChicagoOct. 10-11
National Safety Council, Louisville, Ky.October 14-18
American Trucking Associations, Inc., ChicagoOct. 14-15
American Gas Association—Atlantic CityOct. 14-18
Industrial Materials Exhibit, Hotel Astor, New YorkOct. 21-25
Los AngelesNov. 2-9
S.A.E. Annual Dinner, New York.....Nov. 4
Newark, N. J.Nov. 9-16
American Petroleum Institute—Los AngelesNov. 11-14
PhiladelphiaNov. 11-16
International Acetylene Association, ClevelandNov. 12, 13, 15
BaltimoreNov. 2-9
National Industrial Traffic League—ChicagoNov. 20-21
Columbus, OhioNov. 23-28

groove and is thus prevented from passing upward to the head of the piston. On the up-stroke the oil is paid out slowly, leaving a film of lubricant on the cylinder bore. Preservation of the lubricating film on the bore and the ring of oil carried in the groove are said to provide a liquid seal against blow-by and at the same time insure excellent lubrication.

Pedrick S. C. compression rings are intended primarily for use in high-speed automotive engines, and we are informed that they have been adopted by several large automotive engine builders in both the United States and Canada.

Synthane for Silent Gears

Synthane, a product of the Synthane Corporation, Oaks, Pa., is a Bakelite laminated material that is suitable for the manufacture of silent gears and also comes in the form of sheets, tubes and rods. As a gear material it is claimed to combine resilience, high impact strength and long life. It is particularly recommended by the manufacturers for service where the absorption of shocks is of great importance. Synthane gears are impervious to oil, moisture and mild chemical solutions. The filler is a long-fiber cotton canvass, which gives equal strength in the directions of warp and fill. The tensile strength is given as 10,000 lb. per sq. in., transverse strength as 20,000 lb., and compressive strength as 38,000 lb.

Of particular interest to the automotive industry among the products of the company are Synthane rubbing blocks for ignition distributors and

other electrical fittings of this material. The company has a new shock-resisting material combining the abrasion-resistant qualities of Synthane with the shock-absorbing qualities of a special granulated cork compound. We understand that samples of this material will be shown at the Machine Tool Show.

New Masking Tape Combines Advantages

Trutex is the name of the new masking tape produced by The Seamless Rubber Company of New Haven, Conn. It is made of a material which is said to combine the advantages of both paper and cloth and will strip clean from a finished paint job. The adhesive mass is imbedded in the base material under 30,000 lb. pressure, which anchors it securely, so that it will not stick to the lacquered surface. Trutex is packed in 60-yd. rolls.

Lithoform Makes Paint Stick to Galvanized Iron

With the development of Lithoform by the American Chemical Paint Company, Ambler, Pa., the problem of making paint stick to galvanized iron and galvanneal is said to have been solved. It is claimed that the coating provided by Lithoform will not wash off, will not chip, will not corrode in the weather, and that it is not affected by baking temperatures.

Lithoform is applied by brushing, or spraying, the surface being first cleaned and then lightly scoured with fine steel wool. Following the Lithoforming treatment, the surface is washed and dried and is ready for painting.

Truck Sales Swinging Upward

Potential Replacement Market Unimpaired by Accelerated Rate

by Harold E. Gronseth

Detroit News Editor, Automotive Industries

The usual fall upturn in truck sales is under way and predicated on the strong demand which obtained throughout the summer, truck producers are looking forward to substantially increased activity for the next few months.

This division of the motor industry recovered more rapidly from the depression low and has been making better comparison with the 1929 peak than the passenger car division, but because of its earlier rebound has not shown as big monthly gains over 1934.

Truck sales stand a fair chance this year of equaling the 1929 record volume of 527,057 units. If the gains shown so far over 1934 can be maintained for the balance of the year, the 1935 volume will exceed the previous peak by a small margin. The first seven months this year brought registrations of 305,306 trucks and with a volume in the last five months no larger than that of a year ago, this year's total will exceed all other years but 1929. Whether or not a new record for truck sales is set this year, the gains already made and the prospects for fall business indicate that the industry will have little trouble in crossing the half-million mark in retail sales.

Even the present accelerated rate at which trucks are being purchased is making but small inroads on the potential replacement market, represented by hundreds of thousands of trucks worn out within the past three or four years of conservative truck buying, points out one executive. He cites as another element favoring a further upswing the fact that automobile dealers are becoming more convinced of the profit opportunities of truck selling and are paying more attention to cultivating the commercial transportation market than has been the case in the past.

An example of the upswing in truck demand is found in the weekly delivery figures of Dodge dealers which for five weeks have shown a steady climb.

From 1048 units in week ended July 27, deliveries have increased by weeks as follows—1188, 1262, 1363, 1489 and 1616. The Dodge Truck Division received over 11,000 orders during August and shipped 7850, leaving a backlog of more than 3150 unfilled orders on Sept. 1. The record shipments in August were to domestic points, Canada and overseas shipments, bringing the total to well over 9100 units. Federal has been shipping more than 400 trucks a month and anticipates further gains this fall.

Receipt of another large Government order for more than a half-million dollars worth of Speed Wagons is announced by Reo Motor Car Co. The order brought the company's Government business for the year over the \$2,000,000 mark. The latest contract calls for 642 two-third-ton chassis with 12-ft. stake bodies. Delivery of the entire order must be accomplished within 10 days, Mr. Bates said, and production in the Reo plant has been stepped up to meet the emergency. Like many units included in previous Government orders, these trucks will be used by the Department of Agriculture in soil erosion service.

Chrysler Names Troost Assistant Comptroller

George W. Troost, formerly supervising accountant in the Detroit office of Ernst & Ernst, has been appointed assistant comptroller of the Chrysler Corp., succeeding B. T. Moyer, who recently became president of the Airtemp division of the corporation in charge of production and sale of air-conditioning equipment.

AFL Charges 2 GM Units Violate Wagner Labor Act

Charlton Ogburn, counsel for the American Federation of Labor, Wednesday announced he had filed charges before the National Labor Relations Board against the Atlanta plants of the Chevrolet Motor Company and the Fisher Body Corporation, charging these General Motors subsidiaries with refusal to recognize the United Automobile Workers for purposes of collective bargaining. He also filed a similar charge for the Amalgamated Association of Iron, Steel and Tin Workers, against the Portsmouth, Ohio, plant of the Wheeling Steel Corp.

All of these are old cases. They were pending when the former National Labor Relations Board was knocked out as the result of the Supreme Court NRA decision. Resumption of the drive to unionize the automotive and steel industries being accompanied by a like move of unions in the textile industry, indicates the intensive use being made by organized labor of the Wagner-Connelly Act to gain labor control of these three major industries.

The National Labor Relations Board was scheduled to meet in Washington Friday with regional directors to organize and to determine its policy of procedure.

Elect Macauley Director of Detroit National Bank

Alvan Macauley, president of Packard and of the AMA, has been elected director of the National Bank of Detroit.

Dillon Gets Motor Union Presidency Despite Opposition at AFL Meeting

The International Union of Automobile Workers wound up its first constitutional convention in Detroit last week by accepting the charters granted the various locals by the American Federation of Labor. After days of turbulent debate delegates accepted the terms that went with the issuance of the charters, viz.: "that the AFL shall for a provisional period direct the policies, administer the business and designate the administrative and financial officers."

In the face of strong opposition and after much wrangling on the floor of the convention and in committee rooms, William Green, AFL president, finally

appointed F. J. Dillon, general organizer for the motor industry, as first president of the new union. Homer Martin of Kansas City was named vice-president, and Edward Hall of Milwaukee, secretary-treasurer. Delegates early in the sessions had defeated a resolution authorizing Mr. Green to name Mr. Dillon to the presidency of the new union.

The disgruntled majority, however, were appeased by adoption of a resolution naming a committee of seven to appeal to the AFL executive council and to the national convention of the Federation in Atlantic City next month. In addition to protesting Green's action in

See Volume Near 1929 Peak

naming the officers, the committee is expected to bring before the convention the troublesome jurisdictional question.

The Federation had ruled that the crafts are to remain in their own craft unions already chartered by the AFL, but several locals declared at the convention that they had organized machinists, tool and die makers and other craftsmen and intended to hold them.

While there was general indignation among delegates over the dictatorial attitude of Federation officials, they voted to continue allegiance to the AFL and to work for increased membership. South Bend was selected as the 1936 convention city. Dues were set at \$1 a month with a per capita tax of 35 cents. A reinstatement fine of \$3 plus payment of all dues in arrears and special assessment dues liable three times annually of \$1 per member, "in case of strike, lockout or victimization," also were established.

Hupp Stock Proxy Committee Declines Reply to Andrews

Members of the proxy committee of Hupp stockholders pledged to support Messrs. Mayor, Drake and Merriam, present directors who are seeking reelection to the board, said they preferred not to comment at this time upon statements recently sent out by Archie M. Andrews, former board chairman, who is opposing the reelection of the three directors and soliciting proxies for himself.

The committee members said they prefer to rest their case on the decision of the SEC in the recent stock delisting action and on several court decisions supporting the present management.

Ford Wages, Plants Took \$12,395,000,000 Of \$12,500,000,000 Income Cameron Says

At the second annual meeting of the Merit Club of the service department of the Ford Motor Company, held at Atlantic City, N. J., Thursday, W. J. Cameron made an address on "The Place of Service in Modern Automotive Selling."

The meeting was attended by over 400 winners of the Merit award from all Ford branches east of the Mississippi River, together with representatives from Canada, Belgium, Spain, Denmark, Germany, Sweden, Finland, Cuba, Portugal and Holland. A similar meeting will be held Friday at San Diego, for the Merit winners in the western states.

Touching on the economic situation Mr. Cameron pointed out that Henry Ford by continuing to build cars and plants kept wealth in circulation and that of the \$12,500,000,000 that have been paid to the Ford company, \$12,395,000,000 have been paid out in wages, plant expansion, equipment, etc. Furthermore, Henry Ford has no sympathy in charities that keep men in idleness.

Mr. Cameron stated that in the few complaints on service reaching the factory the great majority of them dealt with lack of interest in the customer's car, while only a small percentage related to discourtesy or lack of knowledge of the car. The service man has a bigger place in the automotive industry than the salesman, as it rests with the service department to justify the car owner's opinion in the selection of a car, Mr. Cameron continued.

He also pointed out that there has been a 63 per cent increase in car mileage ac-

companied by only a 40 per cent decrease in the service required by a car. Furthermore, there are eight million Ford cars on the road today and a more detailed knowledge and expert attention is required in servicing them than in the past.

That service forms the foundation of a successful dealership was proved during the depression, Mr. Cameron said, and his remark that Mr. Ford believes that cars should be kept longer and not discarded seasonally as an outmoded necktie drew considerable applause.

In conclusion Mr. Cameron pointed out that the Ford company has been first, not in the installation of gadgets that had only a passing appeal, but in industrial development and among other points enumerated left-hand drive cars, vanadium alloy steels, lower prices, enclosed brakes, all-steel body, safety glass in low-priced car, torque-tube drive, eight-cylinder V-type engine in low-priced car and unit powerplant.

GM Leases the DeVaux-Hall Plant for Storage Space

General Motors has leased for two years, with option to buy, the former DeVaux-Hall plant at Oakland, Calif., which will be used for storage purposes by the Chevrolet Fisher Division. Chevrolet has an assembly plant at Oakland. The DeVaux plant has 400,000 square feet of floor space and occupies a seventeen-acre site. It is understood the yearly rental is \$42,000 and that the purchase price has been set at \$400,000.

Don Acquires Exclusive British Pontiac Rights

The report that Kaye Don has obtained exclusive selling rights for Pontiac cars in England, Scotland, Wales and Northern Ireland, have been confirmed by the Pontiac company. Mr. Don has organized a distributing company known as Sole Concessionaires, Ltd. in London, Eng.

NRA Kills Blue Eagle

Not exaggerated, reports of the death of the Blue Eagle were officially confirmed Thursday. The National Recovery Administration issued an administrative order cancelling all authorization for reproduction of insignia depicting the one-time tumultuous storm bird. The order declared that further reproduction of any blue eagle insignia or emblem would be contrary to the policy of NRA. The order in barring the production by anyone of the blue insignia for his use or the use of another pointed out that all such insignia or emblems are the property of the government protected by a United States design patent.



Edsel Ford, on the west coast to visit the Ford exhibit at the San Diego exposition, meets Joe E. Brown, left center, Pat O'Brien, right center, and William Keighley, director at right, at the Warner Bros. studio.

Buick Workers Will Average 11½ Mos. Employment in '35; Payroll \$16,504,321

More than 10,000 men will have steady jobs with the Buick Motor Company throughout 1935 at wage rates which are the highest in the company's history and believed to parallel the highest in the automobile industry, according to Harlow H. Curtice, president and general manager.

Buick employment, now at a new high for the year, will be increased during the remaining months of 1935. Several of the company's manufacturing divisions are on two and three shifts daily while other shifts are being added.

Hourly rate workmen on the Buick payrolls have earned an average of more than \$140 a month since the first of the year, averaging 40 hours a week during the period.

There have been and will be no sustained or large layoffs this year due to sales fluctuations or other seasonal causes, with the entire Buick working force averaging 11 and one-third months of work.

"At the beginning of 1935," Mr. Curtice says, "the company launched an earnest endeavor to anticipate retail demand and so schedule production as to maintain a steady rate of employment throughout the year. These efforts have met with remarkable success. Employment data covering the period from January 1 to July 31, 1935, shows that at the low point in employment this year a total of 9912 men were on the payroll as against a previous peak, in May, of 10,833. This low point, which occurred in July, represented the major layoffs of the year and was due to the shutting down of the engine and final assembly plants for retooling in preparation for the production of 1936 models.

"The extensive expansion program carried on at Buick during the past 18 months was accomplished with very little loss of time to Buick's productive workers. Operations were ceased temporarily in the sheet metal, foundry and transmission plants to effect necessary machinery, equipment and plant layout changes. In each instance the shut-down was of short duration, operations being resumed as soon as the changes were effected.

"These and shut-downs of the engine and final assembly plants are the principal items affecting the employment record of the company this year."

Analysis of time charts covering the January to August period is reported to reveal that the average earnings of Buick hourly-rate workers have been substantially increased this year compared with the same period a year ago.

Accountable for the increase is a gain in hourly rates over last year and the fact that the Buick hourly-rate force has averaged 40 hours a week this year as against an average of 36 hours a week during the same period of 1934.

In a comparison of employment fluctuation, Mr. Curtice pointed out that in Oc-

tober last year, the period prior to introduction of 1935 models, 4770 men were on the company's hourly-rate payroll while the October payroll this year will number 11,999 hourly-rate workers. At the same time, the low employment point last year compares with a low point this year, in July, of 9912.

Total wages and salaries for the calendar year 1935 will exceed the \$16,504,321 payroll of 1934, Mr. Curtice said. During the first seven months of this year the company has paid \$10,557,265 to its employees.

U. of C. Issues Revised Diesel Engineering Course

A revised 15-lesson correspondence course in Diesel engineering has been announced by the Extension Division of the University of California. The course presents a general discussion of the elements of the Diesel designed to furnish the practical man with fundamental principles which will assist him in operation and maintenance. The cost is \$7 for students residing in California and \$10 for those living elsewhere. Complete information may be obtained from the University at Berkeley, Cal.

Sask. to Grade Gas

The government of the province of Saskatchewan at the next legislature will introduce regulations for standard grades of gasoline and fuel oils. Gasoline will be colored to represent certain grades and the grade standards will be fixed by legislation. Periodical analysis will be established to ensure maintenance of the proper standard. The Minister of Highways and Transportation, C. M. Dunn, has studied the Province



Alfred P. Sloan, Jr., GM president, and Mrs. Sloan as they arrived in this country from Europe aboard the liner Europa. Mr. Sloan told shipnews reporters he did not anticipate any radical changes in 1936 cars. Mr. Sloan said he believed the chief differences would be body refinements. The GM head announced the corporation would spend \$2,500,000 constructing a new plant in Germany for production of Opel cars.

of Nova Scotia regulations and legislation in effect elsewhere. Further regulations may be announced later.

Cars Under \$750 Wholesale Continue To Dominate Industry's Production

Passenger Car Production by Wholesale Price Classes

(U. S. and Canada)					
Seven Months 1935 and 1934 Compared					
	1935	1934	Per Cent Change	Per Cent of Total 1935	Per Cent of Total 1934
\$500 and under.....	1,357,877	1,096,799	+ 23.8	60.39	64.49
\$501-\$750.....	805,079	517,612	+ 55.5	35.81	30.43
\$751-\$1,000.....	62,027	51,924	+ 19.5	2.76	3.06
\$1,001-\$1,500.....	13,538	22,145	- 38.9	.60	1.30
\$1,501-\$2,000.....	5,120	5,772	- 11.3	.23	.34
\$2,001-\$3,000.....	2,940	4,943	- 40.4	.13	.29
\$3,001 and over.....	1,793	1,591	+ 12.7	.08	.09
Total.....	2,248,374	1,700,786	+ 32.2	100.00	100.00

Truck Production by Capacities

(U. S. and Canada)					
Seven Months 1935 and 1934 Compared					
	1935	1934	Per Cent Change	Per Cent of Total 1935	Per Cent of Total 1934
1½ tons and less.....	448,631	343,727	+ 30.5	94.41	92.50
2 to 3 tons.....	20,452	23,341	- 13.9	4.30	6.28
3½ tons and over.....	3,761	3,286	+ 14.4	.79	.88
Special and buses.....	2,371	1,254	+ 89.0	.50	.34
Total.....	475,215	371,608	+ 28.0	100.00	100.00

Quantity Differential Appears in Steel Mart

Bar Price Up \$1 Per Ton;
100 Ton Buyers Allowed a
Discount of 10c Per Lb.

Quantity differentials, which large tonnage buyers among automotive consumers have sought for a long time as an advantage over small buyers and to which they felt themselves entitled, made their debut in the steel market this week when one of the leading interest's subsidiaries put the new system into effect for steel bars. The base price for steel bars has been advanced \$1 a ton from 1.80 to 1.85 cents a pound, Pittsburgh, and buyers of 100 tons and more of one size and grade for shipment at one time to one destination will get a discount of 10 cents per 100 lbs. or \$2 a ton.

Quantity differentials along somewhat different lines are being considered for sheets and other steel products. In the case of steel bars, buyers of 10 to 25 tons will pay the base price and those ordering less than 10 tons will have to pay extras, ranging from \$1 per ton upwards. For many months steel producers have complained that small lot orders, entailing considerable extra costs, have been eating into what profit margin came their way on round tonnage business. Large automotive consumers have also been contending that putting the buyer of five tons on the same price footing as the five hundred ton customer wasn't fair or good business practice. The quantity differential system is now to be given a try-out.

Steel market activity was rather slow in getting back to normal, following the holiday, over which production at many finishing mills was either entirely suspended or at least curtailed. With a price advantage of \$3 per ton on deliveries of forging billets after Oct. 1

Payrolls Decline Less Than Production

(Federal Reserve and Labor Department
Indexes)

	July, 1935	June, 1935	July, 1934
	Before Seasonal Adjustment		
Production . . .	100	114	82
Employment . . .	100.8	107.2	98.4
Payrolls	85.8	93.4	70.7
	After Seasonal Adjustment		
Production	95	100	78
Employment	97.9	101.5	95.5

overhanging the market for semi-finished steel, somewhat more covering by non-integrated mills is looked for over the next few weeks. Aside from the re-vamping of lists of extras and the introduction of differentials, price changes for the fourth quarter, if any, are expected to be minor in extent.

Pig Iron—Announcement by one of the leading interest's subsidiaries that it would "immediately get into production and maintain a sufficient stock of Bessemer, basic, malleable and foundry iron to be able to meet all requirements of the trade."

Fewer Automotive Workers Lost Employment in July

Labor turnover within the industry for July followed the generally healthier tone exhibited in all phases during the month in comparison with June of this year and July, 1934, according to statistics released by the Department of Labor. Based upon each 100 workers employed during the month of July the numbers who quit, were discharged, laid off and totally separated themselves from the industry showed considerable drops from June and the previous July levels. In the accession rate an increase for July of this year was noted.

The Labor Department's comparative figures for July and June of this year and July of last year are shown in the accompanying table.

	July, 1935	June, 1935	July, 1934
Quit	0.72	0.92	0.98
Discharge	0.21	0.21	0.29
Lay-off	5.02	9.47	6.38
Total separation	5.95	10.60	7.65
Accession	2.46	1.95	2.93

Angle on Lawrence Faculty

Glenn D. Angle, consulting engineer of Detroit, will teach machine design, thermodynamics, and automobile and aircraft engines at the Lawrence Institute of Technology during the coming year.

Campbell Drives Bluebird at 301 m.p.h. On Salt Bed for New World Speed Record

Sir Malcolm Campbell on Tuesday of this week pushed the world's automobile speed mark to 301.337 m.p.h., breaking the previous mark of 276.816 which he established last winter at Daytona Beach and achieving his goal of five miles a minute. The new mark was made on the Bonneville salt beds of Utah.

Just after he had completed the measured

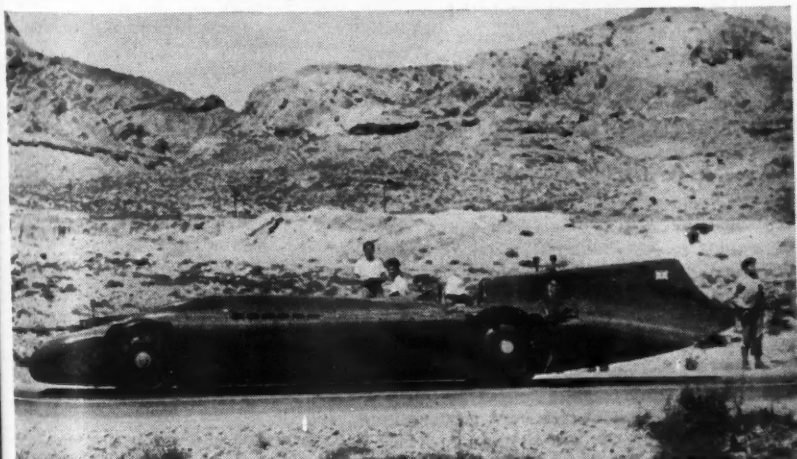
mile on his northward run, the Bluebird's left front tire blew out while the car was still making close to 300 m.p.h., but Sir Malcolm maintained control, a tribute to his ability as a driver and to the stability of his machine.

The new record is the average of two trips over the measured mile in opposite directions. On the northward run, the time was 11.83 seconds for a speed of 304.331 m.p.h. while on the southward trip, the time was 12.08 seconds for a speed of 298.013. The average of these two speeds is the new record.

The manner in which the new record was made establishes the salt beds as the finest site for speed trials in the world. There was no waiting for the course to get into condition. It was ready when Sir Malcolm arrived and after a few preliminary trials prior to Tuesday, he set the new mark on his first attempt.

The history of the world's mile straight-away speed record dates back to the earliest days of the industry when such pioneers as Alexander Winton, Henry Ford and W. K. Vanderbilt, Jr., were pushing the mark up towards 100 m.p.h. In 1904, H. L. Bowden passed that figure with a speed of 109.756 m.p.h. It took 23 years to reach the 200 mark, the late H. O. D. Segrave making a new record of 203.792 m.p.h. in 1927.

As soon as it was revealed that the new record was above 300 m.p.h., Sir Malcolm announced that he was returning to England.



Sir Malcolm Campbell's Bluebird on the salt beds at Bonneville where this week the English speed king drove his car at 301 m.p.h.

Madden Stresses Limitations Commerce Clause Imposes on Labor Disputes Act

Difficulty of defining limitations of the Wagner-Connery Labor Disputes Act was made evident by J. Warren Madden, chairman, of the National Labor Relations Board, in a radio broadcast last Sunday night.

Set up to deal with labor relations, Mr. Madden pointed out that the board's powers are expressly limited to the prevention of unfair labor practices "affecting commerce" and "commerce" is expressly defined as interstate or foreign commerce, except as to territories and the District of Columbia. The emphasis Mr. Madden gave to the limitations of the commerce clause of the Constitution was interpreted to mean that in framing its policy of procedure at a meeting in Washington this week, the board will seek to avoid difficulties, insofar as possible, of preceding labor boards. It is realized that the Wagner-Connery Act is inevitably to be tested in the courts and that one of the chief points of challenge will be its power to pass upon labor questions which opponents will insist do not affect interstate commerce.

At one point in his address, however, Mr. Madden indicated the belief that the board will have rather broad powers. This was brought out when he explained that the commerce clause "as interpreted by the Congress and the courts, proved to be a very broad grant of power." Nevertheless, he gave recognition to the board's limitations when he stated that "The question of defining this boundary which marks the limits of the federal power has always been a difficult one for the Congress and the Courts, and its answer in any case is dependent upon a combination of historical facts, precedents and the practical consideration of the situation."

The preamble of the Act has been criticized as an effort to fix unjustified principles of law for the purpose of overcoming restrictions of the commerce clause. In outlining the purposes of the Act, Mr. Madden pointed out that it recognizes the right of a group of laborers or other employees to join their forces in what they conceive to be their common cause and to authorize one or more representatives to speak for them as a group. Approving this principle, he said that it is a recognition that it is "perfectly lawful for such a group to apply to their industrial relations the principle of representation upon which our American state and national governments are founded."

The Act, he said, recognizes also that in the past, certain employers have not permitted their employees to enjoy the right to organize and enjoy the right of collective bargaining but have "by a variety of means, prevented them from doing so." It was explained that the statute names some of these means and calls them "unfair labor practices." He listed some of these practices, including the one barring an employer

from paying expenses of an organization of employees or paying employees for the time spent in obtaining members or attending meetings of such organization. This particular provision is aimed to strike directly at so-called company unions and was urgently insisted upon by the American Federation of Labor in sponsoring the Wagner-Snyder Act.

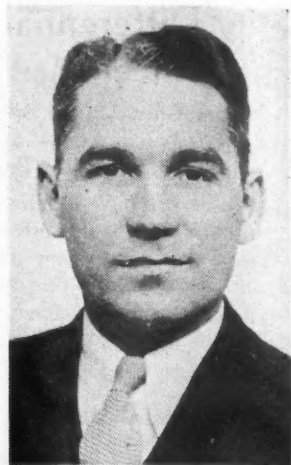
Mr. Madden said that "It is a demonstrated fact that many labor disturbances are caused by these unfair practices. A recent study of strikes in manufacturing industries during the period from January through April, 1935, shows that in more than 45 per cent of the strikes occurring during that period the major issue was either recognition of the employees' chosen representatives for the purpose of collective bargaining or discrimination against employees because of their union activity or a combination of both these causes. Congress rightly thought that the way to attack an evil consequence is to strike at its cause, and has struck at these unfair practices by setting up machinery intended to prevent them."

If the board finds that an employer is indulging in such practices, Mr. Madden said, it may order him to "cease and desist" and to take such affirmative action, including the reinstatement of employees with or without back pay "as will effectuate the policies of the Act." If an employer does not obey such an order, it was pointed out, the board is given authority to proceed in the federal courts to obtain enforcement.

Indicating that the board may adopt the procedure of the Federal Trade Commission, Mr. Madden said another important function of the board is to conduct elections among employees. Referring to the fact that the Act provides for majority rule in collective bargaining, Mr. Madden said that where there is a dispute as to which of two contending parties really has the majority, the board may arrange for a vote on the question. The Act, it was stated, is by no means directed at all the conditions which cause labor trouble but is aimed merely at those practices which involve a violation of the rights of self-organization and collective bargaining.

"It has happened, and will happen again," said Mr. Madden, "that strong labor organizations have demanded more than their employers could allow, and that damage to both parties and the public has resulted. It has happened that strong employers, dealing with employees individually or with a weak organization, have imposed wages, hours or conditions damaging to the workers, the community and indirectly to the employers themselves. The Act contemplates a process of bargaining between parties of more nearly equal strength, trained in moderation by the exercise of the practices of democracy, which should, in the generality of cases, result in a moderate bargain, fair to the parties and beneficial to the public."

In pointing to limitations of the board, however, Mr. Madden cautioned that its



J. W. Watson
New assistant sales promotion
manager of Oldsmobile

power will not apply to a number of situations where there are unfair labor practices but where those practices do not affect or tend to create a situation which will affect the free flow of commerce.

Declaring that the purposes of the Act have received wide and non-partisan approval, Mr. Madden referred to a plank in the Republican platform of 1932 saying that "collective bargaining by responsible representatives of employers and employees of their own choice without interference of anyone is recognized and approved."

"The administration of the new Act will present new and difficult problems," said Mr. Madden. "My associates and myself will devote to those problems such skill and wisdom as nature and our previous training may have given us. Our hope is that we may measurably effectuate the laudable purposes of this statute."

Rebuilt Fisher Plant at Pontiac in Operation

The \$2,500,000 expansion program of Fisher Body at Pontiac has been completed and the new additions in operation, according to E. R. Leeder, manager. The new construction has increased the plant's floor space from 175,000 sq. ft. to 1,400,000 sq. ft. Work was begun about the middle of June.

Production of 1936 bodies began Aug. 20 with a force of about 2000 men which will be increased to a force of about 6000 men by the time peak production is reached. New production facilities will permit the turning out of approximately 1400 daily. All new equipment has been installed in the painting department.

Railroad Buys 10 Buses With Evans Rail Device

Evans Products Co. has announced that an Eastern railroad has purchased 10 buses equipped with its auto-railer device which permits operation either on highways or railroad tracks. The buses cost approximately \$5,500 each. The company also is delivering to the Pennsylvania Railroad this month a truck equipped with auto-railer device which will be used for test purposes.

IT TAKES

Live Action

TO COMPENSATE FOR
WEAR AND LOOSENESS



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Live Action!

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Washer does for a product!
All because it has *Live Action!*
A *live*, continuously working
part functioning as a spring
. . . . with sufficient range of action
to retard wear and looseness.

SPRING WASHER INDUSTRY

Automotive Industries

September 7, 1935

Oldsmobile, Packard, DeSoto, LaFayette, LaSalle 7 Months Registration Gains Top 100% in General Rise of 42.7%

New Car Registrations

	July, 1935	June, 1935	July, 1934	Seven Months 1935	Seven Months 1934	Percent change 7 Mos., 1935 over 1934	Numerical Change, 7 Mos., 1935 over 1934	Percent of Total Seven Months 1935	Percent of Total Seven Months 1934
Ford	83,203	83,273	63,205	571,671	358,485	+59.5	213,186	32.72	29.27
Chevrolet	71,226	66,054	67,026	383,390	335,772	+14.2	47,618	21.94	27.42
Plymouth	40,674	40,263	38,289	253,731	197,274	+28.6	56,457	14.52	16.11
Dodge	18,951	18,693	10,031	115,874	59,443	+94.9	56,431	6.63	4.85
Oldsmobile	15,632	16,421	9,197	96,072	43,542	+120.6	52,530	5.50	3.56
Pontiac	15,208	14,978	8,618	90,332	50,326	+79.5	40,006	5.17	4.11
Buick	6,700	6,758	7,951	40,776	38,928	+4.7	1,848	2.33	3.18
Terraplane	5,454	5,704	4,209	34,295	26,884	+27.6	7,411	1.96	2.20
Chrysler	4,542	4,778	3,257	28,594	16,311	+75.3	12,283	1.64	1.33
Studebaker	3,913	3,966	4,748	24,989	27,648	-9.6	-2,659	1.43	2.26
Packard	4,259	4,313	841	17,479	3,647	+379.3	13,832	1.00	.30
DeSoto	3,057	2,917	1,372	17,317	7,006	+147.2	10,311	.99	.57
Hudson	2,081	2,192	1,930	13,728	12,912	+6.3	816	.79	1.05
Nash	2,081	2,144	1,216	10,414	9,630	+8.1	784	.60	.79
Graham	1,763	1,728	1,532	10,039	8,463	+18.6	1,566	.57	.69
LaFayette	1,872	1,264	1,410	9,614	4,197	+129.1	5,417	.55	.34
LaSalle	1,101	1,403	593	6,749	3,353	+101.3	3,396	.39	.27
Willys	1,157	1,062	946	6,030	4,149	+45.3	1,881	.35	.34
Hupmobile	727	724	694	5,062	3,401	+48.8	1,661	.29	.28
Auburn	522	495	602	3,533	2,902	+21.7	631	.20	.24
Cadillac	457	529	400	3,122	3,335	-6.4	-213	.18	.27
Reo	365	411	467	2,344	2,365	-0.9	21	.13	.19
Lincoln	129	159	160	1,063	1,221	-13.0	158	.06	.10
Pierce-Arrow	87	80	220	465	1,154	-69.8	689	.03	.09
Miscellaneous	34	51	92	452	2,213	-79.6	1,761	.03	.19
Total	285,195	280,360	229,006	1,747,135	1,224,561	+42.7	522,574	100.00	100.00
Chrysler Corp.	67,224	66,651	52,949	415,516	280,034	+48.4	135,482	23.78	22.86
Ford & Lincoln	83,332	83,432	63,365	572,734	359,706	+59.2	213,028	32.78	29.37
General Motors	110,324	106,143	93,785	620,441	475,256	+30.5	145,185	35.51	38.81
All Others	24,315	24,134	18,907	138,444	109,565	+26.4	28,875	7.93	8.96

New Truck Registrations

	July, 1935	June, 1935	July, 1934	Seven Months 1935	Seven Months 1934	Percent change 7 Mos., 1935 over 1934	Numerical Change, 7 Mos., 1935 over 1934	Percent of Total Seven Months 1935	Percent of Total Seven Months 1934
Ford	18,073	17,385	12,492	115,387	73,995	+55.9	41,392	37.79	31.86
Chevrolet	18,608	17,576	14,704	102,804	91,620	+12.2	11,184	33.67	39.45
Dodge	5,336	4,911	4,224	34,032	26,219	+29.8	7,813	11.15	11.29
International	5,308	4,710	2,548	29,739	17,836	+66.7	11,903	9.74	7.68
G.M.C.	857	901	951	5,789	5,430	+6.6	359	1.90	2.34
Diamond T	593	572	457	3,886	3,307	+17.5	579	1.27	1.42
Reo	439	439	416	3,004	3,114	-3.5	-110	.98	1.34
White	233	220	352	1,734	2,644	-34.4	-910	.57	1.14
Studebaker	219	218	156	1,224	938	+30.4	286	.40	.40
Willys-Overland	298	266	...	1,156	13	...	1,143	.38	...
Federal	202	178	182	1,147	1,153	-0.5	-6	.38	.50
Mack	147	103	202	875	1,224	-28.5	-349	.29	.53
Brockway	114	113	147	640	765	-16.3	-125	.21	.33
Autocar	99	73	99	497	629	-20.8	-132	.16	.27
Terraplane	86	108	67	434	268	+61.7	166	.14	.12
Stewart	85	69	67	412	515	-20.0	-103	.13	.22
Plymouth	129	87	16	304	73	+317.0	231	.10	.03
Henney	49	55	32	277	131	+111.5	146	.09	.06
Indiana	103	38	44	246	394	-37.5	-148	.08	.17
Divco	33	40	47	179	160	+12.0	19	.06	.07
Austin	10	13	17	153	389	-67.0	-236	.05	.17
F. W. D.	24	8	11	121	75	+61.4	46	.04	.03
Buick	4	5	11	106	85	+24.8	21	.03	.04
Miscellaneous	194	155	248	1,160	1,257	-7.5	-97	.39	.54
Total	51,243	48,243	37,490	305,306	232,234	+31.5	73,072	100.00	100.00

Metals Society Announces National Congress Program

Among the technical societies participating in the National Metals Congress, to be held at Chicago Sept. 3 to Oct. 4, is the Society of Metals, which has just issued its program. No less than 39 papers will be presented at the technical sessions of the society, and for the first time in the history of the Metal Congress there will be evening lectures. Some of the sessions will be held at the Palmer House, others at the Exposition Hall.

Among the papers listed for presentation are the following:

Spectrographic Analysis, by E. J. Martin. High Temperature Properties of Nickel-Cobalt-Iron Base Age-Hardening Alloys, by C. R. Austin, Pennsylvania State College, State College, Pa.

Grain Size and Its Influence on Surface Decarburization of Steel, by D. H. Rowland and Clair Upthegrove, University of Michigan, Ann Arbor, Mich.

Observations on the Oxidation of Steel, by M. Baeyer, Illinois Steel Co., South Works, Chicago.

Chromium Steels of High Nitrogen Content, by Russell Franks, Union Carbide & Carbon Res. Labs., Niagara Falls, N. Y.

Correlation of Failures from Embrittlement of 4 to 6 per cent Chromium Steel with the Notched Bar Impact Test, by H. M. Wilten, The Texas Co., Fort Arthur, Texas.

Factors Influencing the Nature of the Cutting Speed-Tool Life Curve, by O. W. Boston, W. W. Gilbert and C. E. Kraus, University of Michigan.

Influence of Carbon Content on the High Temperature Properties of Steels, by A. E. White, C. L. Clark, University of Michigan; and R. L. Wilson, Timken Steel & Tube Co., Canton, Ohio.

A New Heat Resistant Alloy, by S. L. Hoyt and M. A. Schell, A. O. Smith Corp., Milwaukee, Wis.

Relation of Hot Working to the McQuaid-Ehn Grain Size, by H. A. Grove, Republic Steel Corp., Canton, Ohio.

Austenitic Grain Size in Cast Iron, by D. W. Murphy and W. P. Wood, University of Michigan, Ann Arbor, Mich.

Endurance of Case-Hardened Gears, by O. W. McMullan, International Nickel Co., Bayonne, N. J.

Pickle Pitting by Electrolytic Potentials as Affected by Scaling Temperatures, by C. H. McCollam, and D. L. Warrick, Timken Steel & Tube Co., Canton, Ohio.

Damping Capacity, A Factor in Fatigue, by G. R. Brophy, General Electric Co., Schenectady, N. Y.

Hardening Characteristics of One Per Cent Carbon Tool Steels, by T. G. Digges and Louis Jordan, U. S. Bureau of Standards, Washington, D. C.

which is directed to battery dealers, attacks undersized batteries "with their skimpy plates and low capacity" which are advertised to sell at low prices and which are used as leaders. Such batteries, the booklet says, are on the way out. The advantages of batteries of adequate capacity are stressed with particular reference to the increased loads they are required to carry in cars built in recent years.

Met Life Issues Pamphlet On Salesman Compensation

The Policyholders Service Bureau of the Metropolitan Life Insurance Company has just issued a report entitled "Selecting a Plan for Compensating Salesmen."

Bahlhorn Joins Federal

J. F. Bowman, vice president in charge of sales, has announced the appointment of Grover J. Bahlhorn as district manager for the Federal Motor Truck Company. Mr. Bahlhorn's territory will comprise eastern Wisconsin and upper Michigan.

Joys Elected Smith V. P.

Carl C. Joys, Jr., has been elected vice president of the A. O. Smith Corp. The announcement of the election was made by Rae F. Bell, executive vice president. Mr. Joys has been associated with the Smith concern since Aug., 1924, first as manager of sales and latterly as director of sales in the oil and gas products division.

DERMA-SAN
DISINFECTANT
HALTS THE DANGER
of infected cutting oils!

GM Seeks More Data of Owners on Car Building

"Your Car as You Would Build It?" is the latest of the ingenious questionnaires developed by H. G. Weaver's Consumer Research Staff of General Motors to test out owner preference. The questions cover body types, radiator design, louvers, fenders, wheels, tires, spare wheel mountings, rear contours, luggage space, streamlining, front seats in coaches, colors, trimmings, transmissions, dash compartments, ventilation, tops, number of cylinders, automatic choke, starterator, brakes, knee-action, etc.

NBMA Booklet Criticizes Undersized Batteries

"Why Penalize the Performance of the Modern Car With an Undersized Battery?" is the title of a booklet which has been published by the National Battery Manufacturers Association, Inc. The booklet,

Oil Dermatitis is a serious skin disease. Caused by the pus-forming germ of cutting oils and compounds infected during use, it spreads rapidly. Once this germ enters cuts on workers' hands, it means . . . compensation payments.

You can protect your men from Oil Dermatitis by sterilizing cutting oils and compounds with Derma-San. It is 15 times more powerful than carbolic acid, but much safer. Add 1 pint of Derma-San to 35 gallons of lubricant, and end all danger of oil infection.

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SAE Research Committee Defines Front Wheel Alignment Terms

Definitions of terms made use of in discussions of wheel alignment have been formulated by a subcommittee of the S.A.E. Research Committee, and publication of the following definitions has been authorized by the Research Committee:

"The caster angle of the steered wheels shall be the fore-and-aft inclination of the axis of the king or knuckle pin with respect to a transverse plane normal to the ground line of the vehicle. Positive caster shall mean that the projected axis of the king or knuckle pin meets the ground plane to the front of a wheel radius normal to the ground line.

"On cars using the Dubonet type of independent suspension, the king pins are not inclined fore and aft, but in a vertical plane at right angles to the center line of the car. The wheel-to-ground contact point, however, is to the rear of this plane, and its distance from the plane varies with load conditions more than on a leaf-spring-suspended car. The caster is given in fractions of an inch rather than of angle.

"Caster angle of passenger cars, unless otherwise specified, shall be checked with the vehicle at curb weight, and manufacturer's specifications shall be based on vehicle curb weight. Manufacturers of commercial vehicles should specify caster at curb weight and at rated gross vehicle weights for standard and optional tires. Manufacturers should furnish tolerances for

the above conditions of load and tire size, and the caster angle should be within the manufacturer's limits.

"King or knuckle-pin inclination shall be the in and out inclination of the axis of the king or knuckle pin with respect to longitudinal vertical plane. King-pin inclination shall be checked with vehicle at curb weight, on a level surface.

"Manufacturers should furnish tolerances affecting king-pin inclination, and king-pin inclination should be within manufacturer's specified limits.

"The camber of the steered wheels shall be the inclination of the plane of the wheel with respect to a longitudinal plane normal to the ground plane of the steered wheels. Camber of steered wheels or vehicles using independent suspension or flexible axles shall be measured and specified with the vehicle at curb weight and with the transverse axis of the sprung mass parallel with the ground line.

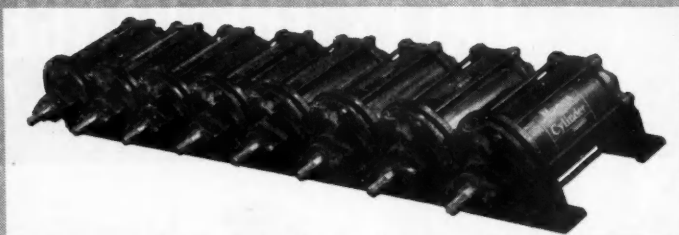
"Manufacturer's specifications should be such as to provide tolerances sufficient to allow for maximum allowable lateral wheel and tire runout, king pin clearances, knuckle pin, knuckle pin bushing and wheel bearing wear. The camber of the vehicles should be within the manufacturer's limits.

"Toe-in shall be construed to mean that the planes of rotation of the steered wheels of the vehicle shall converge at a line in front of the vehicle and shall be the difference of the distances between the front and rear of the tires at a horizontal diameter. Toe-in of vehicles using an independent suspension or flexible connection shall be measured at curb weight and with the transverse axis of the sprung mass parallel to the ground line. The toe-in should be within the manufacturer's specifications.

"Wheel and tire runout shall mean the total sidewise variation of the tire relative to a fixed point on the ground line, checked at the maximum width of section of the tire."

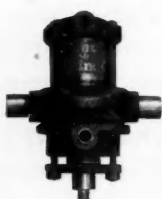
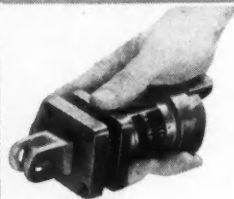
In footnotes it is explained that curb weight (resting on wheels) of the vehicle with its full complements of gasoline, oil, water, tools and regularly released accessories, but no passengers; and that the transverse axis of the sprung mass parallel with the ground line shall mean that the body must be made to assume the same relative position to the steered wheels as when the vehicle is resting on a horizontal plane.

POWER MOVEMENT IN ANY DIRECTION



HANNA Cylinders may be mounted vertically, horizontally or in any other position and deliver the same powerful, smooth, positive thrust or pull motion.

Select an operation in your plant involving a pushing, pulling, lifting or lowering motion and compare cost of doing it with a Hanna Cylinder.



TO LEARN PRICE OF CYLINDER SPECIFY FOLLOWING:

1. Cylinder diameter or force required.
2. Length of stroke. 3. How cylinder is to be mounted.

PUSH—PULL—LIFT—WITH HANNA CYLINDERS

HANNA ENGINEERING WORKS

1761 ELSTON AVENUE

CHICAGO, ILLINOIS

September 7, 1935

New Products Check Chart Devised by Commerce Dept.

The Marketing Research and Service Division of the Bureau of Foreign and Domestic Commerce has prepared a check-sheet for the introduction of new consumer products covering all basic questions involved in the planning, production and marketing of new consumer merchandise. According to the Bureau this chart was created because of the necessity of finding more merchandise for distribution at a profit.

Copies of the report, known as Market Research Series No. 7, are available from the Bureau of Foreign and Domestic Commerce or its district offices. The cost is five cents each.

Automotive Industries

Graham Sees '36 Car Demand Leading 1935

Cites Increased August Orders, Export Demand as Favorable Indicators

Returning from an extensive series of dealer meetings throughout the western half of the United States, Robert C. Graham, executive vice-president of Graham-Paige Motors Corp., said motor car manufacturers could look forward confidently to a steadily increasing demand in 1936.

"Business conditions from the Mississippi westward are healthier than they have been in years," Mr. Graham stated. "Farmers in Iowa, Kansas and Nebraska report exceptional crops and ready markets. In the far West mining activities continue to show satisfactory progress and on the entire Pacific slope business is good and optimism prevails. Substantial proof of the sustained demand in automotive lines is evidenced by the fact that orders received at the factory from Graham distributors increased 16 per cent in August over July, and dealers in cities where we held meetings informed me that retail order taking was continuing briskly."

A sharp increase in export shipments for 1936 is also predicted by Mr. Graham, who cited a 23 per cent gain over July in foreign orders received by Graham last month.

"The steadily increasing foreign demand for cars of American manufacture is reflected in our own export shipments so far this year," Mr. Graham said, pointing out that export shipments of Graham cars for the first eight months of 1935 were 17 per cent more than the entire 12 months of 1934.

Buick Retail Organization to Hear '36 Plans at Flint

More than 3,000 Buick dealers, distributors, zone and regional managers and leading business men in their respective territories will be guests of the Buick Motor Co. during the next 10 days for the 1936 sales convention at which plans for next year will be revealed.

It is the first time in several years the entire dealer organization has been assembled in Flint, according to W. F. Hufstader, general sales manager.

"It is no secret," Mr. Hufstader said, "that Buick's 1936 plans already are well advanced. Production is under way and cars are being shipped to dealers in large numbers."

Dealer stocks of 1935 cars have been reduced to an almost negligible quantity, he said. He indicated that Buick would be among the first of the major automobile companies to announce their 1936 cars.

The principal speaker at the daily sessions will be Harlow H. Curtice, Buick

president and general manager, who is expected to discuss the company's manufacturing policies and outline the progress made in equipping the Buick factories for increased volume. During the past 18 months the company has spent more than \$14,500,000 in plant expansion, renewal of equipment and changeover in preparation for the production of the 1936 cars.

Among other speakers will be Mr. Hufstader, F. A. Bower, chief engineer; T. H. Corpe, director of advertising and sales promotion, and Arthur Kudner, advertising agency chief, who will discuss respectively the sales, engineering, sales promotion and advertising features of 1936 program.

The convention opens September 9, and will continue until September 17.

Bohn Finds Boulder Dam Power Suited to Co.'s Use

Charles B. Bohn, president of Bohn Aluminum & Brass Corp., who recently returned from an inspection trip through the West in connection with the corporation's plans to produce aluminum on a large scale from alunite ore deposits in Utah and Colorado, said that power from Boulder Dam is being considered and appears to be more practical than power from Bonneville Dam earlier considered. Decision will be made within the next 60 days on several proposals from the company. After the first mill has proven successful additional mills would be set up to produce aluminum for the outside market.

Twenty Years of Rust-Preventing Service

Over two decades ago, ACP Deoxidine made the all-steel automobile body possible by chemically cleaning away the rust-accelerators before the bodies were painted.

Since that time, ACP history has been one of successfully developing new processes to protect metals from rust. This development is still proceeding, more vigorous and more effective because of the knowledge and experience twenty years of service provide.

There is an ACP rustproofing process for practically every requirement—be it treating small die castings or protecting large sheet steel units.

Complete information, and the services of ACP technicians are available without charge.



AMERICAN CHEMICAL PAINT CO.
AMBLER, PA.

Chevrolet Does 21 3/4 Miles Per Gal. in Economy Run

Twenty-one and three-fourths miles to a gallon of gasoline, and 3000 miles on 3 3/4 quarts of oil were the records registered by a stock Chevrolet Master Deluxe Sedan in a certified 3000-mile non-stop economy run staged in California.

Inventions Digest Extending Service

Inventions Digest, Inc., 310 So. Michigan Ave., Chicago, which has been furnishing manufacturers with information concerning American inventions, in monthly bulletins covering specific fields, has now extended the

service by making arrangements for listing inventions patented in several European countries and is proceeding with negotiations for similar arrangements with other countries.

New Fruehauf Branch

Fruehauf Trailer Co., Detroit, has opened a factory branch at 121 South Broadway in Green Bay, Wis., under the management of Frank J. Nickolai, a field representative for many years. Green Bay is the center of an important wholesaling business extending not only throughout northeastern Wisconsin but also the Upper Peninsula of Michigan, and motorized trucking is highly developed in that region.

Borg-Warner to Redeem 5000 Preferred Shares

Borg-Warner directors have authorized the redemption of 5000 shares of the corporation's preferred stock having a par value of \$500,000. When accomplished this redemption will reduce outstanding preferred shares to 20,000 with a total par value of \$2,000,000. These shares are called for Nov. 30 at \$107.50 per share and accrued dividends. At the same meeting the board declared the regular quarterly dividend of \$1.75 per share on the preferred stock and 50 cents per share on the common to holders of record as of Sept. 13.

Carbon Dioxide Snow Used to Cool Airplane

Carbon dioxide snow is being used by the Pennsylvania Airlines to cool the cabin of an airplane while it is stopped at an airport. A compressed gas which is basically carbon dioxide is sprayed on the walls and ceiling of the cabin. As a result of the rapid expansion the gas is transformed into snow which evaporates into the atmosphere without leaving moisture or other residue. It is stated that the interior temperature can thus be reduced from 105 to 70 deg. within two minutes and that the lowered temperature will remain from 20 to 30 minutes, which is sufficient time for passenger and express loading, dispatching and for the plane to climb to an altitude where a comfortable temperature exists.

Welding Engineering Course Announced

A special five-day course in welding engineering is being offered by the John Huntington Polytechnic Institute of Cleveland in cooperation with The Lincoln Electric Co. The course begins August 26 and will be conducted once monthly through May, 1936. It will consist of day and evening sessions—day sessions at the Lincoln plant; evening sessions at the Institute.

Extra Dividend Declared

Hoskins Manufacturing Co. has declared an extra dividend of 25 cents and regular quarterly dividend of 50 cents, placing the stock on a \$2 annual basis. In the past four quarters a regular of 25 cents and an extra of equal amount have been paid.

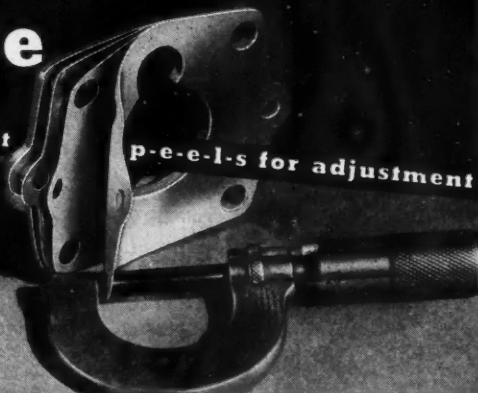
Expansion at Tarrytown

Construction of three additions to the present plant facilities of the Fisher Body and Chevrolet Motor plants at Tarrytown, N. Y., at a total cost of approximately \$500,000 is announced as part of the \$50,000,000 expansion program of General Motors Corp. At peak production, these plants have a combined payroll of 4500 and a pay total of \$160,000 in weekly wages. The corporation hopes to have the new construction completed within two months in order to meet heavy fall and winter production schedules.

• See this

**precision
adjustment
feature**

The solid shim that p-e-e-l-s for adjustment



in the foremost equipment at the show

In adopting Laminum precision adjustment shims the foremost machine tool manufacturers are giving users a feature that cuts maintenance costs and saves production hours throughout the life of the equipment.

Precision bearing, gear, shaft and interchangeable unit adjustments are made right at the machine . . . No longer need you remove parts (or solid shims) to the shop for filing, machining or grinding.

.002" or greater adjustments by simply p-e-e-l-i-n-g one or more laminations at a time from the Laminum shim. Sample on request.

The solid shim that p-e-e-l-s for adjustment

LAMINUM

LAMINATED SHIM CO. 2130 44th Av., Long Island City, N. Y.
Cleveland Detroit Milwaukee

Business in Brief

Written by the Guaranty Trust Co., New York, exclusively for Automotive Industries

General business continued to improve last week, with both production and distribution lines participating. Wholesale and retail trade made a good showing. There was a moderate decline in steel operations after several successive weeks of expansion.

Freight Uptrend Continues

Railway freight loadings during the week ended August 24 amounted to 626,373 cars, which marks an increase of 11,367 cars above those during the preceding week, an increase of 19,456 cars above those a year ago, and a decrease of 11,137 cars below those two years ago.

Food Price Movements in Narrow Range

According to the Bureau of Labor Statistics, retail food prices during the two weeks ended August 13 increased 0.8 per cent. The current index is 2.3 per cent below the high point for this year reached in April, 9.4 per cent above the figure a year ago, and 14.6 per cent above that for two years ago. The current level of prices is about the same as on May 15, 1931.

Chain Store Sales Improve

Chain store sales during July continued the improvement made in the preceding month. The adjusted index of the "Chain Store Age" for that month stood at the preliminary figure of 96.5, based on the 1929-31 average for the month as 100, as against 96.3 for the preceding month and 92.0 for May.

Current Production Moves to New High

Production of electricity by the electric light and power industry in the United States during the week ended August 24 was at the highest point since December, 1929, and was the third highest level ever reached. The current figure is 11.6 per cent above that in the corresponding period last year.

Exports, Imports Make Counter-Seasonal Gains

Contrary to the usual seasonal movement both exports and imports increased in July. Total exports amounted to \$173,371,000, as compared with \$170,184,000 in June and \$161,672,000 in the corresponding period last year. Imports amounted to \$174,162,000, as against \$155,314,000 in the preceding month and \$124,010,000 a year ago.

Irving Fisher's Index

Professor Fisher's index of wholesale commodity prices for the week ended August 31 stood at 84.3 as against 84.6 the week before and 83.7 two weeks before.

The Federal Reserve Statement

The consolidated statement of the Federal Reserve banks for the week ended August 28 showed an increase of \$2,000,000 in holdings of discounted bills. Holdings of bills bought in the open market and government securities remained unchanged. Monetary gold stocks increased \$8,000,000, and money in circulation declined \$1,000,000.

Automotive Industries

CURTIS CRANE AND AIR HOIST

enable two men to pour
a car wheel *a minute*



*"Speed, Safety and Economy of
Curtis Crane and Hoist Equipment
cuts Production time and costs"*

The Griffin Wheel Company, with main offices in Chicago, operates 12 plants in the United States. Curtis Cranes and Air Hoists are used to open and close molds, to propel mold conveyors, and for handling and pouring molten metal, operations that require the utmost accuracy, speed and safety. Mr. E. P. Waud, operating Vice-President of the Griffin Wheel Company, writes*:

"At our 12 plants we use a large number of Curtis Cranes and Hoists. For instance, we have found that one Curtis Crane and Hoist, at a total cost of \$1.75 per day, including power (or the equivalent to 1/3 the wages of one man) is making it possible for two men to pour 200 tons of metal a day—a job that formerly required a gang."

"Because of its light but sturdy construction, Curtis equipment is easy to handle and speeds up production. Curtis construction has always proved dependable, its factor of safety high—a very essential point in handling molten metal."

Perhaps Curtis equipment can show you the way to new speed and economy in your industry as it has done in other industries. Why not consult our Engineering Department on your problems?

*Production executives will find Mr. E. P. Waud's report of vital interest. Copy will be sent on request.

CURTIS PNEUMATIC MACHINERY COMPANY
1917 Kienlen Avenue, St. Louis, Missouri
New York City — Chicago — San Francisco

CURTIS COMPRESSORS—AIR
HOISTS—I-BEAM
CRANES and TROLLEYS

September 7, 1935

Chevrolet Plans Rewards For Service Mechanics

The Chevrolet Motor Co. has developed a plan whereby mechanics who make a serious effort to improve themselves will receive recognition by the company. The plan requires of the mechanic a thorough and constant study of the numerous service department helps issued regularly by Chevrolet. The aspirant to the Approved Service Mechanic's badge which the company will issue must keep himself up to date on the repair manual, the Service News, slide films and bulletins, must attend the weekly shop meetings which are held throughout the organization, pass two written examinations with a high average, and requalify in

the same manner for a new badge each year.

A few months ago, with Chevrolet's approval, a correspondence course for service men was offered throughout the field. Between 3000 and 4000 of these courses have been purchased to date by Chevrolet service men.

New Bakelite Material

A new Bakelite molding material for high-power automotive and aircraft engines has been announced by the Bakelite Corporation. This material is claimed to assure maximum insulation and minimum electrical losses at high temperatures. It is said to be particularly suited for ignition units, that is, distributor heads, magnetos, blocks and other parts.

Hudson Current Ratio Better Than Four to One

Substantial improvement in the cash and working capital positions of the Hudson Motor Car Co. is shown in the company's consolidated statement of assets and liabilities as of June 30, 1935.

After taking into account the proceeds of the \$6,000,000 note sale last April, a gain of about \$2,400,000 in working capital as a result of operations is indicated.

Current assets as of June 30 were \$13,630,395 against current liabilities of \$3,019,978, a ratio of better than 4 to 1. This contrasts with current assets of \$8,276,311 and current liabilities of \$6,138,345 on December 31, 1934, at which time the current ratio was less than 1.4 to 1.

Cash on June 30 was \$9,475,890 compared with \$2,575,538 at the end of last year.

Propose Simplified Color Code for Steel Bar Marks

A proposed Simplified Practice Recommendation covering a Color Code for Marking Steel in Bars has been mailed to all interests by the Division of Simplified Practice of the National Bureau of Standards for their consideration and acceptance.

This recommendation, which was proposed and developed by the National Committee on Iron and Steel of the National Association of Purchasing Agents, is limited to a color code for marking commonly used grades of steel, as represented by S. A. E. numbers, and stay-bolt steel.

July Industrial Activity Higher; Earnings Increase

Contrary to the usual seasonal movement, manufacturing activity, as measured by total man-hours worked, was 0.5 per cent higher in July than in June, according to the National Industrial Conference Board. The increase in total man-hours worked was caused by an increase of 1.4 per cent in the average work week, rather than an increase in the number of workers employed, since the latter fell off 0.8 per cent.

Average hourly earnings were 59.8 cents in July, as compared with 59.9 cents in June, or 0.2 per cent lower. An increase in the average work week from 35.9 hours in June to 36.4 hours in July, however, raised average weekly earnings from \$21.46 to \$21.75 during the same period. Since the cost of living in July was practically the same as in June, the real increase in the average weekly pay envelope amounted to 1.4 per cent.

McNeal, Landis Foreign Representative, at Plant

J. M. McNeal, European sales manager in England and continental Europe for the Landis Machine Company, is visiting the home office at Waynesboro, Pa. While in the United States, Mr. McNeal will attend the National Machine Tool Builders' Exposition at Cleveland.

Corrects GEAR TOOTH PROFILE INDEX ECCENTRICITY AND HELICAL ANGLE

Patents Applied For and Issued • 198950 • 198951 • 198952

Gear and tool in mesh.

Gashed helical cutting tool.

DEGREES - 20

Errors in tooth form reduced to less than a .001

The Red Ring Gear Finishing Machine makes available in commercial gears the same accuracy, silent operation and long-life characteristic of high quality automotive gears. It is a practical and very economical means of gear tooth correction. Operation is fully automatic, requiring no particular skill in the operator. Floor to floor time is only about 10% of that required to finish a gear by means of a light cut on a standard gear cutting machine. A 20-tooth gear with 9.25 pitch, 20° pressure angle and 35° helix angle is usually finished in 20 to 40 seconds (floor to floor).

The machine is always under complete control and operates with the same standard of accuracy noted in diamond boring.

For further details, write for bulletin on this machine.

NATIONAL BROACH AND MACHINE CO.
SHOEMAKER AND ST. JEAN DETROIT, MICHIGAN

AC Spark Plug Completes Large Expansion Program

The largest plant expansion program in the history of the AC Spark Plug Co., involving new manufacturing facilities and installation of new equipment throughout the plant was completed this week.

Included in the expansion program just completed were the following developments:

Construction of a new building and equipment for a new and modern airplane cloth treating plant used in the manufacture of diaphragms for fuel pumps.

Installation of equipment for the manufacture of air cleaners and silencers.

Installation of new paint machines for silencers and breathers.

Establishment of new shipping department and additional docks.

Establishment of new production offices.

New crane building for handling and storage of raw material.

Remodeling of building for receiving and inspection department.

Remodeling of buildings for general maintenance and machine repair shops.

Modern ventilating systems installed throughout plants.

Rearrangement of instrument plant.

Establishment of a new fuel pump manufacturing division was effected, with installation of considerable additional equipment.

Painting of practically every department and machine throughout entire plant.

Installation of new lighting fixtures.

New processing equipment for manufacture of spark plug insulators.

New quarters for spark plug experimental department.

Expansion of power plant building to provide for increased requirements of manufacturing, heating and ventilating.

Rearrangement of die cast plant, including installation of gas burning equipment and various other improvements in ventilation.

Modern plating equipment installed.

Relocation of spark plug operations into well ventilated, well illuminated quarters.

Establishment of parking lots for employees.

Modernization of the cafeterias at both plants was effected.

for them. As long as there is provision for the reasonable and peaceful adjustment of differences, those who deliberately resort to belligerent methods must do so at their own risk.

The Board's activities in connection with collective bargaining covered the period before the elections, the conduct of the elections, and the setting up of the bargaining agencies. Throughout all of these phases it was the Board's policy to promote collective bargaining by encouraging joint conference and negotiation wherever it was clear that employees desired to deal with

their management through representatives of their own selection. Joint conferences of this nature shortly became the order in most of the plants of the industry and before many months the typical problems of the shop—piece rates, methods of wage-payment, standards of safety, seniority, discharge, hours of work—were the general subject of discussion and bargaining.

Anyone as close to the situation as was the Board knows that these questions were not only debated and investigated, but that a very large proportion of them was dis-

New De Luxe HANDEE Grinder



Sensational ELECTRIC TOOL

For constant service. Nothing else like it. New design—modern materials — revolutionary performance. With a speed of 25,000 r.p.m. and ample power, this compact, easy-to-handle production tool does 1001 jobs with astounding savings in time and labor.

Weights 12 ounces. 6" long, 1 5/8" in diameter. Fastest and most powerful portable tool for its weight and type ever developed. Price \$18.50, complete with 6 Chicago Mounted Wheels.

10 Days Trial.

Ask Your Supply House for Demonstration
or Write for More Detailed Information.

CHICAGO WHEEL & MFG. COMPANY

1105 W. Monroe Street

Chicago, Illinois

An Experiment in Labor Relations

(Continued from page 288)

Conduct in the shop which demoralizes production, undermines discipline and forces costs up to no one's advantage exacts a heavy price from the employees as well as from the employer. If, in the heat of conflict, well-meaning men undertake in what they consider a good cause to break the rules of the shop and generally to bedevil the situation, no responsible agency of government can condone acts, obviously costly and demoralizing, however pure the motives and laudable goals of those responsible

posed of by agreement as a result of the procedure of collective bargaining. In these negotiations the outside unions were among the most active participants.

The elections held under the supervision of the Board were designed to afford the employees of the industry an opportunity to select their own representatives and to do it free from any improper influence. The form of the ballots used in the primary and final elections and the rules of the elections offered the voters the alternatives essential to free choice. They could vote for men and designate organi-

zations. The men receiving the highest vote were elected and the designated vote for organizations determined the amount of their representation on the plant bargaining agencies. The procedure of the elections involved all conceivable safeguards against coercion.

And the results of the election furnish all the proof needed of their secrecy and freedom. Of all the persons working on the days of the primary elections, 89 per cent voted and of all the ballots cast in the primaries, more than one-fourth designated labor organizations, whereas 68 per cent were undesig-

nated or unaffiliated ballots. It is perhaps an interesting commentary on the neutrality of the managements in these polls that the company unions, generally regarded as the creature of the employers, polled in 63 plants in the industry only 13 per cent of the whole vote recorded in the nominating elections.

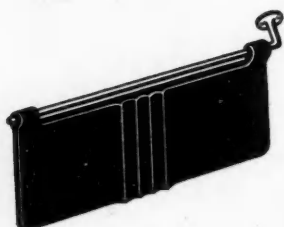
Bargaining Agencies

Organization of the bargaining agencies, composed of elected and designated representatives, was the last phase in the work of the Board. After the installation of the first of the newly elected agencies and conferences with many of them, the Board on April 12, 1935, issued rules and instructions for the guidance of the bargaining agencies and managements in their joint relations. Since the majority of the agencies were not elected until April and May of this year, their history is brief. But the observations which the Board and its agents were able to make while it was still at work and the reports it has since received indicate that these agencies are generally performing with zeal and effectiveness the functions of representation for which they were created.

In the brief space of little more than a year that elapsed between the announcement of the President's Automobile Settlement on March 25, 1934, and the termination of the work of the Automobile Labor Board on June 16, 1935, the most noteworthy change in labor relations in the automobile manufacturing industry is the degree to which collective bargaining has become the accepted method of negotiation. In the next years, the probabilities are strong that the advances so far made in this direction will persist and will be strengthened. And this is likely to be so not because collective bargaining is required by law but because the benefits and merits of this year's experience have commended themselves to both men and management.

WHAT'S NEW IN *Plastics?*

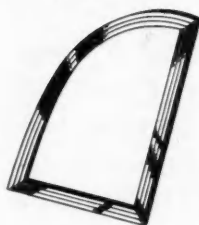
THIS MONTH [Visors, Shafts, Garnish Trim] New Materials



Visors: Current research proves that sun visors made from molded or laminated plastic material are practical, both mechanically and in cost. The new Durez visors would be scratch-proof, stain-proof, grease-proof, peel-proof, and more easily kept clean. Lighter fittings could be used. Plain, matt, ribbed, or many other finishes can be produced by the one molding process.

Small Shafts:

Development of new materials is increasing mechanical uses of Durez. For instance, we now have a material with greater torsional strength and wear-resistance suitable for water pump parts, rods, shafts, etc. It resists the effect of water, oil or gasoline, is lighter than metal, and cannot corrode or rust.



Garnish Trim: New cars will be using Durez trim as soon as the proper dies can be worked out. There are lots of advantages: the Durez finish can't wear off because it's part of the piece and goes all the way through; decorative possibilities are unlimited; less resonance; Durez can't rust or chip; and, we suspect, trick molded-in keys for screwless attachment will be developed. If not, Durez can be drilled. Entire garnish trim units, ready to install, will be produced in one production operation.

New Materials: For brake linings, clutch facings, etc., try Durez 175 or 1606 Resin. 1606 is for impregnated or molded blocks, while 175 is for use in rubber linings. Both give remarkable wearing qualities, oil- and water-resistance, uniform friction coefficient.

If you're not familiar with Durez, we add that it's a hot-molded plastic, supplied either in molding compound form or as resins for impregnating, coating, etc., or in sheet form. New materials are being constantly developed, and we're always anxious to work with you in adapting this versatile material to your needs. Address: General Plastics, Inc., 450 Walck Road, North Tonawanda, N. Y.

Choice of the Motor Industry

DUREZ • Plastic Materials

September 7, 1935

Reynolds Spring to Open Detroit Plant Oct. 1

Orders received by the cushion spring division of Reynolds Spring Co. exceed considerably the capacity of its Jackson, Mich., plant and will necessitate the opening on Oct. 1 of its Detroit plant, which has been closed since early in 1932. The company's molding division has orders on hand sufficient to assure this plant operating at capacity starting Sept. 1, according to Charles G. Munn, president.

Automotive Industries